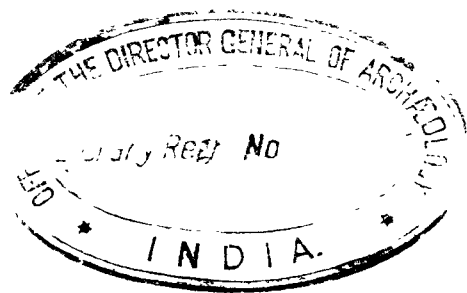


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THE
JOURNAL

OF THE

ROYAL GEOGRAPHICAL SOCIETY

OF

LONDON.

710.5
J.E.S.S.

VOLUME THE NINETEENTH.

1849.

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Royal Geographical Society.

1849.

REPORT OF THE COUNCIL,

READ AT THE ANNIVERSARY MEETING, 28TH MAY.

1. THE Council have to report, that since the last Anniversary Meeting there have been elected 20 new members, and within the same period have occurred 30 vacancies, of which 16 are by death and 14 by resignation; of the latter, however, 7 had been given in in former years, but appear not to have been noticed. The Society consists at present of 670 members, 337 of whom are life compounders, 273 are nominally annual subscribers, besides 39 honorary, and 21 corresponding members.

2. *Finance*.—On balancing the accounts at the close of the year, the outstanding debts amounted to 345*l.* 3*s.* 8*d.*, which rendered it necessary to provide a sum sufficient to meet the deficiency. This has been done by the sale of 278*l.* 4*s.* 4*d.* Consols, and every outstanding debt has been since liquidated. The accompanying balance-sheet shows that the estimates made in the former year have not been exceeded, but that the deficiency has mainly been occasioned by the falling off in the annual subscriptions. The estimates for the present year have been carefully prepared, and the Council cannot but regret that a small deficiency appears probable during this year.

3. *Arrears.*—The arrears of subscriptions owing to the Society on the 1st of January last amounted to the sum of 636*l.* (due from 63 members), of which it has been found impossible to recover, up to the present date, more than 70*l.* Of the remainder the Council regret to report, that from various circumstances a very large proportion will probably be lost. In order, however, as far as possible, to limit any future increase in the number of defaulters, the Council have determined to recommend to the Society the repeal of Rule II., chapter 4. of the Regulations, and the adoption in its stead of one of a more stringent nature, as follows:—

“ So soon in every year as the Auditors shall have presented to the Council their Annual Report, the name of every Fellow reported by them to be in arrear to the Society, together with a statement of the arrear as reported, shall be hung up to view in one of the rooms of the Society; and immediate notice of the circumstance, with an account of the arrear as reported, shall be forwarded to every Fellow whose name shall have been so hung up; and if the arrear be not paid within one calendar month from the date of such notice, or within such further time as the Council may grant, upon special cause to them shown, the Council shall direct that the name of the Fellow so suspended shall be read from the Chair at two successive ordinary General Meetings; and if the arrear shall not have been discharged before the second ordinary General Meeting, the Council shall then be empowered to remove the Fellow from the Society; and the name of the Fellow, which has been hung up, shall not be taken down, until either the arrear shall be paid, or the Fellow shall be removed from the Society.”

4. *Journal.*—The Journal has, during the past year, been published with regularity, and, upon application, furnished to the Fellows free of charge. The Council cannot but fear that the diminished size of the volume of the Journal published during the two past years has operated most unfavourably for the Society, and yet with their diminished resources they could not take upon themselves the responsibility of sanctioning any further expenditure on it, having been compelled to sell out stock to the amount of 278*l.* to meet their ordinary expenses.

5. *Royal Donation.*—Of the two gold medals forming the donation of Her Most Gracious Majesty, that called the Founder's Medal has been awarded to Mr. Austen Henry Layard, for his important contributions to Asiatic geography, published in our Journal; for his interesting researches in Mesopotamia; and for the valuable works in which he has recorded his discovery of the remains of Nineveh, and described the relics of Assyrian art. That called the Patron's Medal has been awarded to Baron Charles von Hügel, the distinguished Austrian traveller, for his enterprising and successful exploration of Cashmere and the surrounding countries, as communicated to the public in his work entitled "*Kaschmir und das Reich der Siek.*" and also for the zeal and ability with which he formed those collections of plants and animals in Australia, as well as Upper India, which have enriched European museums, and particularly those of Vienna.

6. *Library.*—Of the 248*l.* 15*s.* subscribed towards the Library Fund, 232*l.* 14*s.* have been received, of which 153*l.* 4*s.* 4*d.* have been expended, leaving a balance in hand at the banker's of 79*l.* 9*s.* 8*d.* on account of the Library Fund.

7. *Accessions to Library.*—The accessions to the Library during the past year consist of 194 books and pamphlets, 272 sheets of maps and charts, 8 atlases, and 1 planisphere. Many of these are very valuable; and of the maps and charts 78 have been presented by the Lords Commissioners of the Admiralty. The Government of the United States have presented to us a complete set of the charts illustrative of Captain Wilkes's exploring expedition, and have also sent us all the charts connected with the survey of their coasts yet published, and have directed that the name of this Society be placed on the list of those bodies to whom the future charts are to be forwarded as published.

8. *Grants to Travellers.*—Although the Council has been unable to make any large grants during the past year, they have,

upon application, furnished certain numbers of the Journal to Mr. Johnston, and various instruments to Mr. Duncan, who are both about to revisit the scenes of their former investigations in Africa.

9. The Council have further to report, that they have carefully considered several propositions laid before them during the past year respecting the Society's position; and that in consequence of the insufficiency of the annual income of the Society to meet the ordinary expenditure of the year, a Finance Committee was appointed, for the purpose of investigating the state of the Society's affairs and to report thereon. The Committee, having given their best attention to the matter, have made an elaborate Report, which is now before the Council for consideration. One important feature noticed in that Report is the disproportion between the number of members paying an annual subscription and those who have compounded, viz., about 210 annual members to about 340 compounders. This alone, independently of other important considerations, would go far to explain the pecuniary embarrassment of the Society. The first step taken by the Council in consequence of this Report has been the appointment of a Deputation to wait on the First Lord of the Treasury, to represent the state of the Society's finances, and the urgent necessity of some support being afforded by Government to enable the Society to carry out the objects for which it had been established.

The Deputation were very courteously received by the Prime Minister, and, after some discussion, were assured that the question should be fully considered and an early answer forwarded to the Society. As yet no answer has been received, and the Council cannot help drawing a favourable conclusion from this delay. At the same time the Council feel it to be their duty to inform the Society, that should they receive a favourable reply to their application, some considerable expense will be incurred in fitting up the new apartments, in removing from their present situation,

and in making good dilapidations in the present house. Should the reply, on the contrary, be unfavourable, the Council will probably be compelled to call a general meeting of the Society, to lay before it such measures as they may consider expedient to suggest, with the view of placing the Society on a firmer basis, and of devising means to raise such an income as shall be adequate to the wants of the Society, and the legitimate demands of the members.

BALANCE-SHEET FOR THE YEAR 1848.

Cr.

	£.	s.	d.	£.	s.	d.	£.	s.	d.
Balance in Banker's hands, January 1, 1848	136	16	7				263	13	0
“ of Petty Cash in Secretary's hands	7	5	9½				112	10	0
Entrance of 10 Members, at 3 <i>l</i> .				144	2	4½			
Composition of 1 Member, at 2 <i>l</i> .				30	0	0			
Subscriptions of 181 Members, at 2 <i>l</i> .				25	0	0	37	10	0
Acreas paid up				362	0	0	21	0	0
Subscription paid two years in advance				24	0	0	22	10	0
Overpaid, and paid by mistake				4	0	0	10	0	0
Sir T. Phillips' Donation to Library Fund				3	0	0			
Dividends on 227 <i>l</i> . 8 <i>s</i> . 10 <i>d</i> . at 3¼ per Cent.				10	0	0			
“ on 22 <i>l</i> . 1 <i>s</i> . 10 <i>d</i> . Consols				71	17	8			
Royal Premium				6	10	6			
Borneo Mission, lent (six quarters)				52	10	0			
“ “ for Fuel				45	0	0			
Journals sold—				1	1	0			
By Mr. Murray	81	19	3				203	10	0
Less 123 copies sent to Society, at 4 <i>s</i> .	24	12	0				23	5	10
At Society's Apartments	57	7	3				8	17	3
Indices sold	3	7	0				5	10	9
Sale of 27 <i>sl</i> . 4 <i>s</i> . 4 <i>d</i> ., 3¼ per Cent. An., at 88½ per cent., and Commission				60	14	3	5	1	6
				0	17	0	3	2	6
							7	13	2
							10	0	0
							118	12	4
							19	19	0
							1	11	0
							1	7	0
							1	13	6
							46	14	0
							10	0	0
							2	0	0
							2	2	3
							329	18	3
							1	12	9½
							331	11	0½
							£1,086	17	1½
							24	12	0
							£24	12	0

By 123 Copies of Journal on Sale

£1,086 17 1½

£24 12 0

Examined and approved, London, May 14, 1849.

ROBERT BUDDULPH, Treasurer

THOS. LEE,
PETER DICKSON, } Auditors.* 4*l*. 5*s*. 1*d*. on Library account.

Receipts.

ESTIMATE FOR THE YEAR 1849.

Expenditure.

Receipts.			Expenditure.		
£.	s.	d.	£.	s.	d.
Balance at Banker's, 1st January, 1849 (of which arose from Sale of Stock, 246 <i>l.</i> 4 <i>s.</i> 4 <i>d.</i>)			The following Accounts remained unsettled Jan. 1, 1849 :—		
Balance of Petty Cash in Secretary's hands	1	12 9½	Stationer	5	16 11
Entrance of 20 Members at 3 <i>l.</i>	..	..	Assist. Secretary and Editor	37	10 0
Subscriptions of 215 Members at 2 <i>l.</i>	..	..	Clerk	12	10 0
Composition of 1 Member, at 25 <i>l.</i>	..	..	Messenger	7	10 0
Arrears paid up	..	..	Collector	21	0 0
Royal Premium	..	..	Printer—	..	..
Borneo Mission (Rent)	..	..	Vol. XVIII., Part I.	73	19 10
Dividends on 2000 <i>l.</i> at 3½ per Cent.	..	..	II.	53	2 3
“ 22 <i>l.</i> 1 <i>s.</i> 10 <i>d.</i> 3 per Cent. Consols	..	..	Rent	65	18 3
Sale of Journals	..	..	Coal Merchant	11	1 0
Indices sold	..	..	Mr. Saunders (Physical Atlas)	3	3 0
Library Fund (repaid from)	..	..	Mr. Walker, for Map of South Country	15	18 0
Estimated deficiency	..	..	Mr. Arrow-smith, for Illustrations	34	18 11
			Sundries (Petty Cash)	2	12 6
			Balance owing by the Society, Jan. 1, 1849	345	3 8
			Rent and Fixtures	..	..
			Salaries and Wages	..	..
			Office Expenses, including Firing, Lights, Evening Meetings, Stationery, Postages, Stamps, &c.	..	..
			Furniture and Repairs	..	..
			Insurance and Advertisements	..	..
			Miscellaneous Printing	..	..
			Journal	150	0 0
			Illustrations	..	..
			Gold Medals	30	0 0
				46	11 0
				£1,191	10 8

NORTON SHAW.

A SUMMARY of the RECEIPTS and EXPENDITURE of the ROYAL GEOGRAPHICAL SOCIETY, from July, 1830,
to the 31st December, 1848, inclusive. (*Continued from the Table in Vol. XVI.*)

RECEIPTS.	FROM July 14, 1830, TO Dec. 31, 1845.	1846.		1847.		1848.		Amount of principal items.
		£.	s. d.	£.	s. d.	£.	s. d.	
Entrance Fees	2,922 0 0	90 0 0	48 0 0	30 0 0	3,090 0 0	7,028 0 0	8,640 19 0	878 16 0
Compositions	6,783 0 0	170 0 0	452 0 0	25 0 0	362 0 0	28 0 0	78 8 2	2,309 1 8
Annual Contributions	7,318 19 0	478 0 0	26 0 0	75 2 11	86 3 3	100 0 0	945 0 0	1,793 9 11
Arrears recovered	728 16 0	96 0 0	81 7 0	30 16 6	..	..	..	100 0 0
Dividends on Stock	2,074 3 7	116 6 2	52 10 0	52 10 0	52 10 0	246 4 4	515 9 8	12 9 0
Journals sold	1,560 4 0	..	286 17 6	..	..	..	18 11 0	2,280 0 0
Copyright of a Map sold	100 0 0	..	..	..	..	..	15 0 0	75 0 0
Royal Premiums	787 10 0	52 10 0	..	..	..	..	1 1 0	1 1 0
Sale of Stock	2,806 1 6	286 17 6	..	..	..	..	..	10 0 0
Funds of Palestine Association	515 9 8	..	..	..	..	..	..	267 5 0
Advertisements in Journal . . . . .	..	12 9 0	..	..	..	..	..	..
Overpaid by mistake . . . . .	..	3 13 0	2 1 0	14 1 0	..	..	..	..
In aid of Expeditions	2,080 0 0	200 0 0	..	..	..	..	..	..
Borneo Mission Rent . . . . .	..	15 0 0	15 0 0	15 0 0	15 0 0	15 0 0	15 0 0	15 0 0
— for Fuel . . . . .	..	..	..	..	..	..	..	..
Horticultural Society	10 0 0	..	..	..	..	..	..	..
Various Donations	210 0 0	57 5 0	..	..	..	..	..	..
Total of Receipts	27,326 3 9	1,659 7 8	751 10 5	967 6 9	30,701 8 7	..	..	..

EXPENDITURE.

Rent and Fixtures	2,719 11 2	197 14 9	263 13 0	263 13 0	3,474 11 11
Salaries and Wages	4,573 15 0	400 0 0	237 10 0	150 0 0	5,361 5 0
Collector	217 0 0	21 0 0	21 0 0	21 0 0	310 0 0
Messenger and Housemaid	139 0 0	26 0 0	40 0 0	32 10 0	237 10 0
Firing and Lights		26 6 0	18 9 4	23 5 10	68 1 2
Stationery		14 7 8	2 15 4	8 17 3	26 0 3
Office Expenses { Postages, Carriage, Postage, &c.	1,786 3 11	19 19 4	21 1 7	5 10 9	76 11 8
Office Expenses { Instruments		1 2 6	.. ..	.. ..	1 2 6
Office Expenses { Evening Meetings		14 14 5	4 15 6	5 4 6	24 11 5
Office Expenses to 1845, inclusive . . . . .		.. ..	.. ..	.. ..	1,786 3 11
Insurance, &c.	73 13 9	7 6 0	5 11 0	3 2 6	89 13 3
Furniture and Fittings	798 7 7	6 15 6	15 11 2	7 13 2	828 7 5
Journal		263 18 11	.. ..	148 12 1	412 11 3
Journal to 1845, inclusive	5,977 13 0	256 13 6	.. ..	21 10 0	278 3 6
Miscellaneous Printing	576 13 2	28 13 6	6 7 6	1 7 0	613 1 2
Books and Maps	1,132 3 1	10 9 0	7 0 2½	1 13 6	1,151 5 9½
Premiums	919 14 0	46 10 0	16 0 0	46 14 0	1,058 18 0
Expenditures	3,846 5 0	.. ..	.. ..	.. ..	3,846 5 0
Purchase of Stock	4,126 0 0	.. ..	200 0 0	.. ..	4,026 0 0
Illumination	10 0 0	.. ..	.. ..	.. ..	10 0 0
Subscriptions returned	52 0 0	5 3 0	.. ..	12 0 0	69 3 0
Sundries	13 12 10	1 0 9	3 12 10	2 12 3	20 18 8
Total of Expenditure	27,321 12 6	1,377 14 10	893 10 5½	755 6 1	30,348 3 10½

RECAPITULATION.

Total Receipts up to the 31st December, 1848 . . . . .	.. ..	£.	s.	d.	£.	s.	d.
Total Expenditure up to the same date . . . . .	.. ..	30,348	3	10½	30,704	8	7
Add for early Error undiscoverable . . . . .	.. ..	0	1	8			
By 123 copies of Journal on sale	24 12 0	30,348	5	6¼			
Petty Cash	£1 12 9½						
Balance at Banker's	329 18 3	331 11	0½				
		356	3	0½			
		30,704	8	7			

ROYAL GEOGRAPHICAL SOCIETY.

Patron.

THE QUEEN.

Vice-Patron.

H. R. H. PRINCE ALBERT.

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(37)

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(21)

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T.

- *Taylor, Richard, Esq., F.L.S., G.S.,
&c.
540*Thatcher, Colonel, E.I.C.
Thomson, J. Turnbull
Thornton, the Right Hon. Sir Ed-
ward, G.C.B.
*Thornton, Edward, Esq.
Thornton, George, Esq.
Thornton, Rev. T. Cooke
*Tindal, Charles, Esq.
*Tindal, Charles John, Esq.
*Tune, J. A., Esq.
*Tooke, A. W., Esq., M.A.
550*Townry, George Edward, Esq.
Trevelyan, Sir W. C., Bart., M.A.,
G.G.S., L.S.

- Trithen, Francis H., Esq., M.A.
Trotter, Captain H. D., R.N.
*Truman, Dr. Matthew
*Tuckett, Frederick, Esq.
*Tufnell, Henry, Esq., F.R.S., G.S.
*Turnbull, Rev. Thomas Smith, F.R.S.,
G.S.
Twiss, Dr. Travers, D.C.L.

U.

- Urquhart, David, Esq., M.P.

V.

- 560*Vacher, Mr. George
*Vane, Lord Harry, M.P.
*Vaughan, the Right Hon. Sir Charles,
G.C.H.
Vaux, William, Esq.
*Verney, Major Sir Harry C., Bart.
Vetch, Captain, R.E., F.R.S., and
G.S.
*Vidal, Captain, R.N.
Vigne, G. T., Esq.
Vivian, John Henry, Esq., M.P.
*Vulhamy, B. L., Esq.
570*Vyvyan, Sir R. R., Bart., M.P.,
F.R.S., G.S.

W.

- Wade, Col. Sir Claude M.
Walker, James, Esq., C.E.
Walker, Mr. John
Walker, Mr. Michael
Walker, Captain J. G., R.A.
Wallace, E. J., Esq.
Walter, George, Esq.
*Warburton, Henry, Esq., M.P.
Washington, Captain, R.N., F.R.S.
580 Watson, Sir Frederick B., K.C.H.,
F.R.S.
Watson, William, Esq.
Wedderburn, John, Esq.
Weir, William, Esq.
*Wells, Lieut.-Colonel, R.E.
*Westall, William, Esq., A.R.A.
*Westminster, Marquis of
*Westminster, the Very Rev. the
Dean of
*Weston, Samuel C., Esq.
*Weyland, John, Esq., F.R.S.
590*Whewell, Rev. W., F.R.S., S.A., G.S.
Whinyates, Lieut.-Colonel, R.A.

*Whishaw, James, Esq., F.S.A.
 Wilbraham, George, Esq.
 *Wilkinson, Sir J. Gardner
 *Williams, Rev. David, D.C.L.,
 F.S.A.
 *Willich, Charles M., Esq.
 Wills, W. H., Esq.
 Wilson, Capt. J. R.
 *Wilson, Belford Hinton, Esq.
 600 Winterbottom, J. Edward, Esq.
 Wise, Henry, Esq.
 *Wolfe, Captain, R.N.
 Wolff, the Rev. Dr.

*Wharnccliffe, Lord
 Worthington, the Rev. Dr.
 *Wyld, James, Esq., M.P.

Y.

Yates, John Ashton, Esq.
 *Young, George F., Esq., M.P.
 *Young, James, Esq.
 610 Young, Charles Baring, Esq.
 *Yorke, Lieut.-Colonel

NAMES OF INDIVIDUALS TO WHOM THE ROYAL PREMIUM HAS BEEN AWARDED.

- 1831.—Mr. RICHARD LANDER, for the discovery of the course of the River Niger or Quorra, and its outlet in the Gulf of Benin, in Central Africa.
- 1832.—Mr. JOHN BISCOE, for the discovery of the land now named "Enderby's Land" and "Graham's Land," in the Antarctic Ocean.
- 1833.—Captain Sir JOHN ROSS, R.N., for discovery in the Arctic Regions of America.
- 1834.—Major Sir A. BURNES, C.B., F.R.S., for the navigation of the River Indus, and a journey by Balkh and Bokhara across Central Asia.
- 1835.—Captain Sir GEORGE BACK, R.N., for the discovery of the Great Fish River, and navigating it to the sea on the Arctic Coast of America.
- 1836.—Captain ROBERT FITZROY, R.N., for the survey of the shores of Patagonia, Chile, and Peru, in South America.
- 1837.—Colonel CHESNEY, R.A., F.R.S., for the general conduct of the "Euphrates Expedition" in 1835-6, and for the accessions to comparative and physical geography relating to the countries of Northern Syria, Mesopotamia, and the Delta of Susiana.
- 1838.—Mr. THOMAS SIMPSON, [Founder's Medal.] for the discovery and tracing, in 1837 and 1838, of about 300 miles of the Arctic shores of America.
- Dr. EDWARD RUPPEL, [Patron's Medal.] for his travels and researches in Nubia, Kordofan, Arabia, and Abyssinia.
- 1839.—Mr. R. H. SCHOMBURGK, [Patron's Medal.] for his travels and researches during the years 1835-9 in the colony of British Guayana, and in the adjacent parts of South America.
- Major H. C. RAWLINSON, E.I.C., [Founder's Medal.] for his travels and researches in Susiana and Persian Kurdistan, and for the light thrown by him on the comparative geography of Western Asia.
- 1840.—Lieut. RAPER, R.N., [Founder's Medal.] for the publication of his work on "Navigation and Nautical Astronomy."
- Lieut. JOHN WOOD, I.N., [Patron's Medal.] for his survey of the Indus, and re-discovery of the source of the River Oxus.
- 1841.—Captain JAMES CLARK ROSS, R.N., [Founder's Medal.] for his discoveries in the Antarctic Ocean.
- Rev. Dr. E. ROBINSON, of New York, [Patron's Medal.] for his work entitled "Biblical Researches in Palestine."

- 1842.—MR. EDWARD JOHN EYRE, [Founder's Medal.] for his explorations in Australia.
- Lieut. J. F. A. SYMONDS, [Patron's Medal.] for his survey in Palestine and levels across the country to the Dead Sea.
- 1843.—MR. W. J. HAMILTON, M.P., [Founder's Medal.] for his researches in Asia Minor.
- Prof. ADOLPH ERMAN, [Patron's Medal.] for his extensive geographical labours.
- 1844.—M. CHARLES RITTER, [Gold Medal.] for his important geographical works.
- Dr. BEKE, [Founder's Medal.] for his extensive explorations in Abyssinia.
- 1845.—Count P. E. DE STRZELECKI, [Founder's Medal.] for his extensive explorations and discoveries in the South-Eastern portion of Australia, and in Van Diemen's Land: and for his valuable work, in which he has consigned the results of his observations.
- Professor A. TH. MIDDENDORFF, [Patron's Medal.] for his extensive explorations and discoveries in Northern and Eastern Siberia.
- 1846.—Captain CHARLES STURT, [Founder's Medal.] for his various and extensive explorations in Australia.
- Dr. LUDWIG LEICHHARDT, [Patron's Medal.] for a journey performed from Morton Bay to Port Essington.
- 1847.—Captain CHARLES WILKES, U.S.N., [Founder's Medal.] for his Voyage of Discovery in the S. Hemisphere and in the Antarctic Regions, in the years 1838-42, and for the volumes which he has published, detailing the narrative of that expedition.
- Sir JAMES BROOKE, Rajah of Sarawak and Governor of Labuan, [Patron's Medal.] for his expedition to Borneo.
- 1848.—AUSTEN H. LAYARD, Esq., D.C.L., [Founder's Medal.] for his contributions to Asiatic geography, researches in Mesopotamia, and discoveries of the remains of Nineveh.
- Baron CH. V. HUGEL, [Patron's Medal.] for his enterprising explorations of Cashmere and surrounding countries, communicated in his work entitled "*Kashmir und das Reich der Siek*," and for his collections of plants and animals of Australia and Upper India.

PRESENTATION

OF THE

G O L D M E D A L S,

AWARDED RESPECTIVELY TO MR. AUSTEN HENRY LAYARD AND
BARON CHARLES VON HUGEL.

“GENTLEMEN,—You have already been informed by the Report of the Council that they have awarded the Founder's Medal to Mr. Austen Henry Layard, for the valuable additions to Asiatic Geography which he has contributed in his several papers communicated to this Society, and for his persevering exertions in exploring the remains of the ancient cities of Mesopotamia, which have resulted in the discovery of the ruins of Nineveh, and the removal to this country of an invaluable collection of marbles illustrative of Assyrian art; it therefore becomes my duty to explain to you the grounds of this award. It is now ten years since Mr. Layard quitted this country with the view of visiting some of those classic localities in the East, which give so great a charm to the investigations of the Geographer and the Historian. After passing rapidly through the more trodden plains of Asia Minor and of Syria, his thoughts turned eastward, irresistibly attracted, as he says, by the mystery which overhangs the regions of Assyria, Babylonia, and Chaldaea—the birth-place of civilization, and almost, as it were, the cradle of the human race.

“In the spring of 1840 he proceeded from Aleppo to Mosul. Here he visited the ruins on the east bank of the Tigris, including the mounds of Konyoumjik, hitherto generally looked upon as the remains of Nineveh. Journeying on one occasion with his companion to the ruins of Kalah Sherghat on the banks of the Tigris, about 70 miles below Mosul, they halted for the night at the Arab village of Hammum Ali, and were much struck by the appearance of a line of lofty mounds and ruins near the junction of the Zab and the Tigris, the foundation of which tradition attributed to Nimroud. But it was not until 1845, after a long residence at Constantinople, and in the countries of the Yezidis and the Kurds, and amidst various Arab tribes, that Mr. Layard was enabled, by the liberality of Sir Stratford Canning, to put in execution his long-cherished wishes of exploring what had so often attracted his attention and occupied his thoughts.

“How Mr. Layard proceeded in his arrangements for this work—how he conducted his negotiations with the rude inhabitants of the district, and the less rude, but more wily, Turkish authorities of Mosul—what tact he displayed in baffling the intrigues of enemies, and what

ingenuity he showed in overcoming the physical obstacles of nature, are fully detailed in his admirable work on the Remains of Nineveh.

“The interesting results of Mr. Layard’s exertions and discoveries, so far at least as they have reached this country, we have all seen in the British Museum; and although we may not venture for a moment to compare them as works of art with the classic productions of Phidias, the relics of the Parthenon, or the other monuments of Grecian art which adorn the national museums of Europe, it is impossible to look upon these monuments of a more ancient age without taking a deep interest in their discovery, and experiencing a strong feeling of curiosity as to the hands by which they were executed, the monarchs whose palaces they adorned, and the nation whose state of art and of civilization they so admirably illustrate. And our feelings of wonder and surprise rise to a still higher pitch, mingled however with somewhat akin to disappointment and regret, when our eyes wander along those endless lines of writing with which so many of these monuments are inscribed, to the deciphering of which no satisfactory clue has been discovered, and which no human intellect has yet succeeded in translating. What priceless relics of history, what valuable records of the past are here presented to our view, without our having the means of explaining a single word, or deciphering a single letter! But the merits of Mr. Layard’s work are not confined to the ruins of Nineveh. He availed himself of several opportunities, when circumstances compelled him to quit the scene of his antiquarian excavations, to visit the mountainous districts in the north, and to explore the secluded haunts of the Yezidi, the Kurd, and the Nestorian. The descriptions he has given us of these people are full of interest, particularly that of his visit to the Yezidi chief, during the celebration of their annual festivities; he also gives a slight sketch of their religious forms and worship, of which so little was hitherto known, although so much had been suspected and asserted.

“Mr. Layard has also greatly contributed to our knowledge of Asiatic Geography by the papers which he has on several occasions communicated to this Society. In the 12th volume of our Journal, p. 102, will be found a notice of ancient sites among the Bakhtiyari Mountains, extracted from a longer communication. In this notice, short as it is, are many useful corrections of the information respecting the Valley of Susan previously obtained by Major Rawlinson from oral sources. Another communication from Mr. Layard will be found in the 16th volume of our Journal, entitled ‘A Description of the Province of Khúzistán.’ This province nominally belongs to the Persian empire, and is situated near the head of the Persian Gulf, between the Euphrates and the Bakhtiyari Mountains. Mr. Layard’s paper yields in point of interest to none in our Journals, and is a valuable complement to Major Rawlinson’s memoir on Susiana, Luristan, and Kirmanshah, published in our 9th volume. Major Rawlinson may be said only to have reached Khuzistan, entering it from the north, while Mr. Layard, who visited it from Baghdad, has given us a general description of the whole province. We have here, first, a full account of its political condition, and its divisions under different tribes; secondly, a careful description of its physical geography, its

rivers, and their tributaries, all of which fall into the Euphrates between its junction with the Tigris and the Persian Gulf. The paper concludes with some remarks on the ancient geography of Susiana, in which many of the difficulties by which geographers have been perplexed in elucidating the route of Alexander through this country on his march to India are satisfactorily explained. It is on these grounds, and in the hope of stimulating Mr. Layard to still further exertion, that the Council have resolved on conferring on him the medal which I now hold in my hands as a proof of their high sense of his praiseworthy and meritorious undertaking."

The President, then addressing Mr. Austen, said—

"MR. AUSTEN,—In handing to you this medal which has been awarded to your nephew, Mr. Austen Henry Layard, by the Council of the Royal Geographical Society, I have to request that you will cause it to be conveyed to him in the name of the Royal Geographical Society, and that you will inform him that the Council are happy in having this opportunity of testifying their high approval of his exertions in the cause of geographical science, and of the zeal and ability with which he has carried out his undertakings, by which his name has become connected with one of the most interesting discoveries of modern times. I trust that you will also assure him that our regret at his not being present to receive it himself is mitigated by the knowledge that he is about to return again to the scene of his former discoveries, to add fresh laurels to those he has already won. I request you at the same time to assure him of the warm interest which the Royal Geographical Society will ever feel in his future welfare and prosperity."

Mr. Austen, in reply, stated:—

"I feel, Sir, quite incompetent to reply to your very kind and flattering address, and regret exceedingly that my nephew, Mr. Layard, being absent from England, is unable to receive in person the Gold Medal which the Society have done him the honour to award him. It will give me the greatest pleasure to forward to him so gratifying a mark of their esteem for his services. May I hope, Sir, that you will favour me with a copy of your address, that I may forward it to my nephew, who will, I know, most fully appreciate the kind sentiments you have expressed. Having watched him from his cradle, I feel very naturally the greatest pride and satisfaction in the success of his labours, and in the honorary distinctions which reward them. It gives me pleasure, therefore, to be his sponsor on this very gratifying occasion. I know he has always felt deep interest in this Society; and before he left England (now ten years ago), having thrown off the trammels of the law, which was his destined profession, I saw him poring over maps and plans, with his mind evidently bent on exploring the far East.

"You have alluded, Sir, to the result of some of his wanderings, which were communicated to this Society through Lord Aberdeen, and which have appeared in the Transactions of the Society. When

he left England, he had no letters of introduction, and no patronage or assistance of any sort ; but, though so young, his character was formed. Firm and energetic, with courage which nothing could daunt, he combined an indomitable and enterprising spirit with the most amiable disposition. His work, lately published, and to which you have so kindly alluded, shows how much he effected and the power he possessed to deal with the greater difficulties of his enterprise. Until that work was published, none of his friends were aware of the amount of those difficulties, for he scarcely alluded to them ; although his health, I regret to say, has much suffered from his exertions.

“ It is not improbable that my communication will be first made to him in England : as he may have left Constantinople, on his way home, before my letter reaches him, to prepare for a more extended field of operations, which will, I trust, show him still deserving of the distinguished honour now paid to him.

“ It only remains for me, Sir, again to thank you, and to assure you that I shall with great pleasure communicate to him the very gratifying proceedings of this day.”

PATRON'S MEDAL.

The President, then proceeding, observed—

“ You have also been informed that the Patron's Medal has been awarded by the Council to the distinguished Austrian traveller Baron Charles von Hügel, for his enterprising and successful exploration of Cashmere, the Punjab, and the surrounding countries, as communicated to the public in his work entitled ‘*Kashmir und das Reich der Siek* ;’ and also for the zeal and ability with which he formed those collections of plants and animals in Australia, as well as in Upper India, which have enriched European museums, and particularly those of Vienna.

“ The fame of Baron Hügel's travels has been so long before the world, and the character they have acquired for faithful representation and graphic delineation is so well known, that it is unnecessary for me to enter upon that subject. I therefore propose to take a rapid glance of Baron Hügel's route, to mention the principal places which he visited, and to describe the line of country over which he passed in his novel and interesting expedition. I will only mention, as a proof of his accuracy, that it has been stated that during the late military operations against the Sikhs, our officers derived the greatest advantage from the correctness with which he had described the country he visited, and the care with which it was laid down in the map constructed by Mr. Arrowsmith chiefly from his materials. When we recollect the difficulties of travelling in Eastern countries, and particularly in the then less known portions of Runjeet Singh's dominions, unassisted by a single companion, as was the case with Baron Hügel, we can well appreciate the energy with which he carried out his plans, and the perseverance which enabled him so faithfully to record what he had seen.

“ But to return to our narrative. After many months of prepara-

tion and delay, Baron Hügel started from Simla on the 13th of October, 1835, and crossed the Sutlej into the Maha Rajah's territory at Belaspoor. The lateness of the season prevented his taking the less frequented route by the Berenda Pass, and thus reaching Cashmere by way of Ladak. Equally unwilling to cross the plains of the Punjab, Baron Hügel determined to take the direction of the lowest range of the Himalaya: thus avoiding the difficulties of the mountain-passes and the monotony of the plains.

"From Belaspoor he proceeded to Narpoor, thence to Cashmere by the more practicable route of Jammú, thus skirting the Punjab, instead of attempting the then impassable route by Kishtiwár. Here the vegetation is described as truly luxurious; watered as the country is by the numerous streams rising at the foot of the Himalayas, or within the parallel ranges by which it is skirted. After quitting Jammú, he entered a mountainous district, and, proceeding in a more northerly direction, entered the happy valley of Cashmere by the Pass of Pir Punjal. He was unfortunate in the season; the cold of winter disabled his Indian followers and added to his difficulties.

"At Sirinaghur, the capital of Cashmere, he fell in with our countryman Mr. Godfrey Vigne, with whom he subsequently travelled to Attock, and through the Punjab to Lahore. One of the great peculiarities of Cashmere is the absence of storms and wind; probably owing to the sequestered position of the valley, surrounded by ranges of lofty mountains. From Sirinaghur, Baron Hügel and Mr. Vigne visited the eastern portion of the valley as far as Islamabad, near which was one of the summer palaces of the Emperors of Delhi, situated on the banks of the Jylum. This river is navigable throughout almost the whole length of the valley of Cashmere. After a short delay, Baron Hügel quitted the capital in company with Mr. Vigne and Dr. Henderson, and proceeded to visit the Wallar Lake, near the north-west extremity of the valley, whence they ascended the mountain barrier 7000 feet above Cashmere. Beyond this lake the current of the Jylum increases, and on reaching the Baramulla Pass, by which our travellers proposed descending to Attock, it becomes a rapid stream. This pass is the boundary of Cashmere: a rapid descent leads, amidst scenery of the wildest description, following the windings of the river, to Muzafferabad, 3000 feet below Cashmere. A fatiguing and dangerous journey over a wild country brought them from thence to Attock. On many occasions the zeal with which Baron Hügel pursued his investigations in botany and natural history exposed him to much danger from the prejudices of the natives, aroused by his killing birds which were held sacred by them. At Attock Baron Hügel again found himself in the plain of India, and at length reached the limit of his journey; being, as he says, the first European who had hitherto wandered through this vast empire from its most southern point at Cape Cormorin, to its northern boundary at Attock.

"From Attock he proceeded by the imperial route to Lahore, through a country now well known, but the details of which are graphically described in the work before us, which deserves the careful perusal of those who wish to have a vivid picture of Indian life, and of the varied impressions excited in the minds of those who visit India from

the distant West. The description of the route from Attock to Lahore is peculiarly interesting at the present moment, associated as it is with the proceedings of the late campaign against the Sikhs.

"At Lahore Baron Hügel remained some time enjoying the hospitality of Runjeet Singh, of whom and his government he gives us a lively and interesting account. His description of Runjeet's troops, of his officers, and especially of his powerful artillery—powerful even in that day (1836), is particularly worthy of remark. The work concludes with some brief political and geographical remarks on the kingdom founded by Runjeet Singh, and on the Punjab.

"But I must here conclude, and omit alluding to any other portion of Baron Hügel's adventurous travels, through China, Singapore, and Australia. His work on Cashmere and the Punjab is alone sufficient to place him in the foremost rank of the distinguished travellers of the age."

The President, then addressing Sir Roderick Murchison, said:—

"SIR RODERICK MURCHISON.—In handing to you this medal for your friend Baron Hügel, you will allow me to observe that we had hoped from your own statement that the Austrian Minister, Count Colloredo, would have been able to be present on this occasion to receive the medal for his distinguished countryman: the Royal Geographical Society would have witnessed with pleasure the presence of one whose name is so well known to science as that of Count Colloredo.

"In his absence, however, I must request you, as the personal friend of Baron Hügel, to forward to him this medal, and in doing so, to assure him of the warm interest felt by this Society in his prosperity and happiness, and of their hope that the speedy restoration of peace and quiet to his country will enable him to resume those occupations, in which he has hitherto been engaged with so much satisfaction to himself, and so much advantage to his country."

To which Sir Roderick Murchison replied—

"Whilst I regret that public duties have prevented his Excellency the Austrian Minister, Count Colloredo (himself a worthy cultivator of physical science), from being present to receive this medal, I have the sincerest pleasure, Sir, in being made the organ of communication between yourself and my distinguished friend Baron C. Hügel, who will, I am certain, deeply value this token of the esteem and consideration of the Royal Geographical Society of London. We have, Sir, in truth, done honour to ourselves in thus recompensing an enlightened and enterprising foreign nobleman, who has so freely devoted years of toil, and a competent fortune, to the advancement of our science; and I trust that this manifestation of our opinion of his merits may so strengthen the just claims which he has upon the gratitude of his country, that when Austria shall have regained internal tranquillity, we may see our medallist occupying the high post of Director of the Imperial museums and gardens of Vienna, which he has so much enriched—a post which I have authority to state it was intended he should occupy, if the recent revolution had not intervened to check (for a time only, let us hope) all administrative scientific arrangements."

ADDRESS

TO THE

ROYAL GEOGRAPHICAL SOCIETY OF LONDON;

Delivered at the Anniversary Meeting on the 28th May, 1849,

By W. J. HAMILTON, Esq.,
PRESIDENT.

GENTLEMEN,—In attempting to lay before you a sketch of the progress of Geography during the past year, I must, as on a former occasion, claim your indulgence for the many imperfections and omissions which I have but too good reason to fear you will detect. From many of our usual correspondents we have received but scanty information; we have scarcely received any from Germany or Italy. This must no doubt be attributed to the political convulsions by which the greater part of Europe has been agitated during the period I have to review. Men's minds have been too much preoccupied by social discord and political strife to attend to the more peaceful occupations of literature and science. The motto, 'cedant arma togæ,' has been unfortunately reversed; and although many travellers and scientific wanderers in distant lands have continued to pursue their laborious investigations in the field, the lucubrations of those who, in the recesses of their closet, arrange and prepare for the public the discoveries of their more active brethren, have been unusually limited. Such materials, however, as I have been enabled to collect I now proceed to lay before you.

OBITUARY.

It is, however, my first duty—and on this occasion it is a painful one—to notice those of our associates whose loss we have to lament, and who by their various exertions have contributed to the advancement of the science for which this Society has been more especially

established; and I regret to be compelled to add that we have this year to lament the loss of a more than usual number of distinguished comrades.

Amongst our foreign Associates we have first to lament the loss of the learned Letronne, whose death took place near the close of 1848. M. Letronne was Keeper of the French Archives, Member of the Academy of Belles Lettres, Professor of Archæology, and Administrator of the College of France, and also one of the first founders of the Geographical Society of Paris in 1822. He was one of the most distinguished amongst the many learned men who graced the list of our Foreign Honorary Members. The translator of the last book of Strabo, and author of numerous articles in the scientific publications of France, he ever took a lively interest in the progress of Geography itself, and of all the cognate subjects with which it is connected. It has been reported that the French Government intend to undertake the publication of the last two volumes of Greek Inscriptions found in Egypt, left in manuscript by M. Letronne. His death is a serious loss to the cause of learning in France, and has already been feelingly alluded to by M. Vivien de S. Martin in his report to the Geographical Society of Paris.

I have also to announce the death, within the last few days, of Dr. Honegger, our latest elected Corresponding Member. He was born at Donaueschingen in 1803. An engineer and draftsman of very considerable merit, he proceeded to Africa in 1831, where he spent many years in surveying different portions of the regency of Tunis, and some of the forts on the Mediterranean. During his residence in that country he discovered and collected many interesting antiquarian monuments, including inscriptions in the Phœnician character, some of which were bilingual, a portion being in Latin. With the help of these he was looking forward to deciphering the old Phœnician language, and had already succeeded in identifying several ancient sites.

First on the list of our own countrymen, we regret to find the name of the late Sir John Barrow. He will long be remembered by us as one of the original founders of this Society, as he was for many years one of its most active and most zealous promoters. Sir J. Barrow was born in June, 1764, at Dragleybeck, near Ulverstone, in North Lancashire, and showed an early taste for mathematics and surveying. His love of travel was evidenced in his youth by his quitting his employment as clerk in an iron-foundery for a voyage to Greenland in a whaler. Soon after his return he received the appointment of comptroller of the household in Lord Macartney's suite on the occasion of

his embassy to China. Here Mr. Barrow soon made himself acquainted with the language, literature, and science of China.

Mr. Barrow afterwards accompanied Lord Macartney, in 1797, as Private Secretary, on his important mission to settle the government of the Cape of Good Hope; and when Lord Macartney returned to England, was left by him Auditor-General of Public Accounts, Civil and Military. The state of public affairs compelled him to return to England in 1803, when he published the results of his observations, under the title of '*Travels in Southern Africa.*' In 1804 he published a second volume of *Travels*, and in the same year was appointed by Lord Melville Second Secretary to the Admiralty, a post for which he was well fitted by his peculiar turn of mind and the interest he had taken in our colonial and transmarine negotiations. The change of Administration in 1806 led to his removal, but his claims to a pension were recognised by his political opponents; in 1807, on the dissolution of the Grenville Ministry, he was restored to the Admiralty by Lord Mulgrave. He has himself stated that, from the 8th of April, 1807, to the 28th of January, 1845, he had continued without interruption Second Secretary to the Admiralty, under twelve or thirteen Administrations. In 1835 he was created a Baronet, and retired from public life in 1845, at the advanced age of 81.

During the many years of his official career his attention was ever directed to the advancement of the cause of science, and especially to the spread of geographical information. It is particularly with reference to two events during this period of his life that we now wish to contemplate his memory. First, for the important share which he took in 1830 in the formation of this Society, and the prominent manner in which he ever came forward to advocate its interests and its prosperity. It is hardly necessary for me to remind you that Mr. Barrow took the chair at the two preliminary meetings on the 24th of May and 16th of July, 1830, when the principles on which this Society was founded were first brought forward and embodied. You will find them in the first volume of our *Journal*, and you will there find evidence of the active interest taken by Sir J. Barrow in our earliest proceedings. The first article in our *Journal* was from his able and ready pen; and he ever showed himself as willing to support, as he was originally anxious to found a Society which he looked upon as likely to confer a lasting benefit on his country, and to convey to its members wholesome and useful information. Secondly, for the unwearied energy with which he constantly encouraged those Voyages of Discovery which have so greatly enlarged the bounds of science, and have added to our know-

ledge of the surface of our globe and of the physical phænomena displayed on it. He ever took a peculiar interest in those expeditions undertaken with the view of finding a North-west Passage, and urged the prosecution of voyages of discovery in the Arctic regions; and however much we may be disposed to regret the hitherto unsuccessful expenditure of labour—and, must I add, loss of life—we cannot but admire the steady perseverance which made him the constant and successful advocate with successive Governments of these expeditions.

I cannot conclude this notice without adding a list of the numerous works which Sir J. Barrow has published:—A considerable number of articles in the *Quarterly Review*; ten or twelve articles in the *Encyclopædia Britannica*; a *Review of the Life of Lord St. Vincent* in the *Edinburgh Review*; a *Life of Lord Macartney*, in 2 vols. 4to.; *Travels in Southern Africa*, 2 vols. 4to.; *Travels in China*, 2 vols. 4to.; *Voyage to Cochin-China*, 1 vol. 4to.; *Life of Lord Anson*, 1 vol. 8vo.; *Life of Lord Howe*, 1 vol. 8vo.; *Life of Peter the Great*, and *An Account of the Mutiny of the Bounty*, in the *Family Library*; a *Chronological History of Arctic Voyages*, 1 vol. 8vo.; *Voyages of Discovery and Research within the Arctic Region*, 1 vol. 8vo.

Another member of our Council whose loss we have to lament was Major Shadwell Clerke, F.R.S., and for a short time our Honorary Foreign Secretary, although the state of his health had not permitted him of late to take any active part in the discharge of these official duties. He entered the army in 1804, and served with great credit and gallantry in the Peninsular war. His promotion in the service was unfortunately checked by his being wounded before Burgos, which resulted in the loss of a limb, and his being compelled to retire on half-pay as unattached Major. After this he directed his attention to literary pursuits.

The talent with which Major Shadwell Clerke established and carried on the '*United Service Journal*,' the loyal and patriotic tone which he imparted to it, the energy with which he entered into every enterprise for the advancement of knowledge among his brother soldiers and sailors, particularly in founding the *United Service Museum*, will long be recollected by his friends, and will ensure the remembrance of that warm attachment, which subsisted between him and the numerous men of science and of letters with whom he was so intimately associated.

Another distinguished man whose loss we must deplore was Dr. Pritchard, the late President of the *Ethnological Society*, before whom an interesting memoir of his life was lately read by Dr. Hodgkin, from which I may be permitted to extract a few remarks:—"Dr. James

Cowles Prichard was born on the 11th of February, 1786, at Ross, in Herefordshire. His parents were members of the Society of Friends, in whose principles he was himself educated. He was never sent to school, but his own ardent thirst for knowledge and his father's views enabled him at an early age to acquire a vast mass of practical and valuable information. Modern languages and history were his chief pursuits; during his residence at Bristol he employed himself in examining the peculiar characteristics of natives from different countries who frequented that port. After his father retired to Ross, Dr. Prichard was sent to Bristol to enter upon the study of medicine; thence he removed to Staines, and subsequently to London, where he pursued his medical studies at St. Thomas's Hospital, under Dr. Turner.

In 1806 he went to Edinburgh, and while a student in that university, first began to embody his ideas on the varieties of the human race. This subject became the favourite topic of all his meditation, and even of his correspondence with his father, who took a lively interest in his investigations. Having taken his degree at Edinburgh, he passed a year at Trinity College, Cambridge. It was shortly after this period that he separated himself from the Society of Friends, and joined the communion of the Church of England. He was thus enabled to enter the University of Oxford, where he became a Gentleman Commoner of Trinity College. In 1810 Dr. Prichard settled as a Physician at Bristol, and continuing his researches on the Physical History of Man, brought out the first edition of his work on that subject towards the close of 1813. Nearly thirteen years intervened between the publication of the first and second editions of this work. During this period he continued his medical studies, and published several works and articles in various periodicals. Besides medical works, I may mention a translation of Müller's General History, in conjunction with his friend W. Totill: an article on the Mithridates of Adelung; three papers on the Mosaic Cosmogony in Tilloch's Journal; papers on the Universities, on the Zodiac, on Isis and Osiris, on Falm and Schlegel, besides continuing his researches on Egyptian mythology and history, and their relations to those of India.

In 1826 he published the second edition of his researches into the Physical History of Man. Besides much elaborate additional information on other subjects, the philological portion of the subject in this second edition was greatly enriched by a survey of the different relations of languages to each other, by the announcement of his discovery of the affinity of the Celtic languages with Sanscrit and other branches

of the Indo-European family, and by a tabular view of the known families of man, with their localities and languages, arranged according to their geographical distribution.

In 1831 Dr. Prichard published a separate volume on the affinities of the Celtic languages; and in two reports presented to the British Association for the Advancement of Science he has shown the importance of philology as one of the principal elements of ethnology. In 1838 he published an *Analysis of the Egyptian Mythology*. It was translated into German, with a preface, by Aug. Wilh. v. Schlegel. To the second edition of this work is added a critical examination of the remains of Egyptian chronology.

But while investigating the intricacies of the past, Dr. Prichard did not overlook the present wants and interests of the weaker and more oppressed branches of the human race. He hailed with satisfaction the formation of the Aborigines Protection Society, and was one of its early advocates. With this view he gave to the British Association for the Advancement of Science, at the meeting in Birmingham in 1838, a paper on the Extinction of Races.

On accepting the office of Inspector of the Lunatic Asylums, Dr. Prichard came to reside in London, and succeeded Sir Charles Malcolm as President of the Ethnological Society. After this he completed the third edition of his great work, now extended to five volumes, and considered his literary labours as accomplished. His death was occasioned by a feverish attack caught whilst engaged in one of his official tours, visiting the lunatic asylums in the neighbourhood of Salisbury, on the 4th of December, 1848. He shortly afterwards returned to London, but all the efforts of medical skill were unavailing, and he died on the 22nd.

To these we have to add Mr. James Morier, as sincerely lamented as he was universally known and esteemed. He was born in 1782, and his acquaintance with the literature and forms of Oriental life commenced at an early period. Having entered the diplomatic service, he went to Persia with Sir Harford Jones in 1807. In 1810 he was appointed Secretary of Embassy in Persia. In July, 1811, he sailed for Persia with Sir Gore Ouseley, and arriving at Bushire in January, 1812, he remained in Persia until October, 1815, having been appointed Minister Plenipotentiary at the Court of Teheran on the cessation of Sir G. Ouseley's embassy. Before leaving England, however, he prepared for publication an account of his journey home, entitled '*An Account of a Journey through Persia, Armenia, and Asia Minor to Constantinople, in the years 1808 and 1809,*' in which

is included some account of the proceedings of His Majesty's Mission, under Sir Harford Jones, to the Court of the King of Persia. The work was published in 1812. After his return to England he published, in 1818, an account of his second journey through the same countries; and in 1824 he published the first of that series of entertaining novels, which, from the graphic description he was well able to give of Oriental life and manners, were at once, and have ever since remained, so deservedly popular. In October of the same year he was sent on a special mission to Mexico, and after a short return to England, again sailed for Mexico in 1825, from whence he returned in the following year.

In Lieut.-Colonel Alexander Watt Robe we have lost a distinguished member of our Society, and the country has to regret a gallant and able officer. Lieut.-Colonel Robe, the second son of the late Colonel Sir William Robe, was educated at the Royal Military College at Woolwich. Shortly after obtaining his commission he joined the army in the Peninsula, was present at the passage of the Bidassoa and the Adour, and served with the Army of Occupation in France. On his return to England he was appointed to the Ordnance Survey, and was employed with Major-General Colby in the triangulations of the Highlands and Western Isles of Scotland. Prior to the publication of the Map of Lincolnshire, a revision of the greater part of the original plans became necessary, owing to their defective state. This laborious task was performed by Lieutenant Robe and some other officers of the Royal Engineers, with great rapidity and skill, and the Map of Lincolnshire was published in a comparatively short period and in very perfect condition.

Colonel Robe was attached to the Survey for a period of 18 years; during the latter part of the time he superintended the Drawing and Engraving Departments at the Ordnance Map Office in the Tower previous to its removal to Southampton. During his employment in this office it fell to his lot to attend to the numerous applications from newly-formed Railway Companies for correct data and distances; and by his valuable assistance and general information a great amount of labour and expense was in many instances avoided.

When Lieut.-Colonel Robe obtained the rank of Brevet Major he rejoined the corps of Engineers to take his turn of active professional duty. He was ordered to Newfoundland, where he died as Commanding Engineer Officer, after a residence of several years, deeply regretted by all classes of the community.

It is with regret that I have to add to this list the name of Lieut.

Ruxton, a gallant officer cut off in the prime of life, from whose love of enterprise and adventure we had a right to expect much service in the cause of geographical science. Lieut. Ruxton commenced his career in a regiment of Lancers in the service of the Queen of Spain, where his gallantry obtained him a decoration seldom conferred on so young an officer. On his return to England he was gazetted to the 89th Regiment, and proceeded to Canada; but a desire for a more active life soon prompted him to undertake an expedition of a most daring kind. He proposed traversing the African continent in the parallel of the Southern Tropic. For a correct estimation of this undertaking I must refer you to Sir R. Murchison's remarks from this chair in his Address in 1845. A short account of the cause of his failure and the almost fatal termination of his expedition was read before this Society in the end of the same year; the detailed account of it is inserted in the 'Nautical Magazine' for January, 1846. Lieut. Ruxton, nothing daunted, prepared to start a second time under the sanction and with the assistance of the Government, who applied to the Council of this Society for their opinion on the matter. Notwithstanding their favourable reply, so many delays and difficulties were interposed, that he was compelled to renounce for the time all thought of African discovery, and turned his attention to Mexico and the American continent. The result of this expedition was the publication of his lively and interesting work, entitled 'Adventures in Mexico and the Rocky Mountains,' which I alluded to in my Address last year. He subsequently published a series of papers in 'Blackwood's Magazine,' entitled 'Life in the Far West,' giving a graphic description of the life of the trappers, hunters, and others in those wild regions. Towards the end of 1847 he again started for America, with the intention of crossing the Rocky Mountains and exploring the country in the vicinity of the great Salt Lake. In May last he met with an accident from a fall while crossing the Rocky Mountains, by which he himself stated that he feared he had injured his spine; his death is reported to have taken place some time afterwards at St. Louis on the Mississippi.

Mr. John Biscoe is another of our Members whose loss we have to regret during the past year. His name stands prominently forward as one of the earliest recipients of the Royal Premium or Medal. In 1832 this honour was awarded to Mr. Biscoe for the discovery of the land now named Enderby's Land and Graham's Land in the Antarctic Ocean, the result of that enterprising spirit and love of discovery which led him, while prosecuting his whaling operations, to extend his

voyages far to the southward in search of land. An interesting account of his expedition will be found in the 3rd volume of the *Journal*, p. 105.

The late Earl Talbot is another of our Members whom we have lost during this fatal year.

In Mr. James Alexander we have lost a zealous friend and a liberal patron. For many years connected with Indian affairs, the wealth he had obtained was ever at the service of merit and of science. The Royal Geographical Society was greatly indebted to his unostentatious liberality, and the interest he took in our progress and prosperity was evidenced by an annual donation of 50*l.* for the Library, continued during several successive years.

I may be allowed also to record the deaths of two gallant officers who were not Members of this Society. They have been so frequently alluded to in these rooms, and have contributed so much geographical information to our *Journal*, that, when I mention the names of Lieut. W. Christopher and Capt. Carless, you will, I am sure, approve of my here alluding to them.

Lieut. Christopher was born in 1814; after entering the Indian Navy, he was employed for five years in the surveys of the coasts and islands of the Red Sea, and for the next five years in the surveys of the Maldivé Islands, the Gulf of Manaat and Chagos Archipelago, under Capt. Moresby. He subsequently surveyed the east coast of Africa, in command of the *Tigris* brig of war. It was then, that, having made a journey into the interior he discovered a large stream, which he named the Haines river, an account of which, with a chart, was published in the 14th volume of our *Journal*, p. 76. After this he was employed in the Indus flotilla under Capt. Powell, chiefly in Scinde, and afterwards in ascertaining by surveys how far up the rivers Indus, Sutlej, Chenab, and Ravee were navigable by steam. In July, 1848, he joined the force under Lieut. Edwardes operating before Mooltan, and received his death-wound while pointing out the way to a detachment of troops advancing to support the force already in the trenches.

Capt. Carless, whilst in command of a squadron of the Indian Navy in the Persian Gulf, was suddenly carried off by a severe attack of small-pox, in the 42nd year of his age, at Bushire, on the 16th of December last. Capt. Carless was highly distinguished in the service to which he belonged. He had been much employed in surveys, and many of the results of his labours have already been before the world in the pages of the *Geographical Journals* in India and in England. For some years he had the Aden and Red Sea station, and commanded

the Sesostris when the Cleopatra, alluded to in the Memoir hereafter mentioned, went down with all on board.

Amongst the other losses which the Society has sustained, I may mention the names of Mr. Bate, Mr. Edward Forster, Mr. Benjamin Harrison, Mr. George Hathorn, Mr. R. N. Hunt, and Mr. W. H. Lloyd.

OUR OWN LABOURS.

IN reviewing the papers which have been communicated to the Society at our Evening Meetings during the past session, I would, in the first instance, remind you of the valuable Memoirs we have received from Dr. Gutzlaff, describing, from the best authorities he has been enabled to consult, the different provinces bordering China Proper on the west and south-west, and which are more or less directly dependent on the Celestial Empire. We are still so ignorant of almost every detail respecting those districts, that although Dr. Gutzlaff had not the advantage of personally investigating them, we cannot but hail with satisfaction this result of his examination of Chinese authorities. We are assured from various sources that Chinese maps and statistics, although not possessing the mathematical accuracy of similar documents in Europe, are nevertheless deserving of confidence, and form a satisfactory basis for such geographical communications.

In the Memoir entitled the 'Geography of the Cochin-Chinese Empire,' Dr. Gutzlaff, after adverting to some of the principles of Chinese policy, describes the provinces of Tunkin, extending between China Proper and the country of the Free Laos, Yunnan, Daugtrung, Tsiampa, Kambodia watered by the river Mecom, the Moi territory, and the Laos tribes subject to the Annam Empire. He then gives a full account of its coasts and islands, and the numerous rivers, some of considerable magnitude, by which it is watered, a notice of its Fauna and its Flora, with description of the more valuable products of the vegetable world, its mines and minerals, and he concludes with a succinct history of the Annamen and Kambodian races, and some details of their commerce, exports, manners, and customs, their government and political condition, and their languages.

Another Memoir, which you have heard read, describes the country of the Free Laos. They are but little known: they consist of many tribes, extending from the mountains of Yunnan, in the north, to the Siamese Laos states, in the south. The moral character of these independent people is described in high and favourable terms: in contrast with the degraded state of the people by whom they are surrounded.

they are simple and uneducated. Their country abounds in wild mountainous districts, watered by numerous rivers, and containing much mineral wealth in its almost inaccessible recesses, besides precious stones of great value. They have hitherto resisted all the attempts of the Chinese at conquest, and under the guidance of their native princes have remained a peaceful people.

The next Memoir by the same author is a description of the frontiers of China towards Birmah. This embraces the mountainous district of Yunnan, north of the Laos states, and in which many of the great rivers which traverse the southern portion of this extensive peninsula take their rise. The inhabitants of one district are Mahometans, and have been treated with great cruelty by the Chinese and Chinese Laos. Towards the north the inhabitants merge in the Thibetian race. The mystery of the Tsampoo river is here alluded to, but no solution is offered, although a slight preference is given to the theory of its forming one of the principal tributaries of the Irawady.

A longer and more important Memoir of Dr. Gutzlaff is entitled 'Thibet and Sefan.' The first part of the paper is devoted to Thibet. Its boundaries are given according to Chinese accounts, and its natural features—remarkable in almost every respect, as compared with those of more favoured regions—are fully described. Its scanty vegetation, its dreary deserts, its mysterious lakes, the sources of rivers whose courses are yet unknown, its hardy yet superstitious inhabitants, its plains 14,000 feet above the sea, surrounded by lofty mountains, have been all brought under our notice. After describing the physical features of Thibet and the neighbouring districts of Shipkee, Ladik, &c., we have an interesting account of Lamaism, in its most flourishing condition, as exhibited in its priest-ruled strongholds of Ca-hi-lombo, and L'Hassa, under the despotic sway of the Banchin and the Dalai Lama. Here, too, are the sources of the Tsampoo or Dsangpo, also called Sampoo, respecting which we are still ignorant as to whether it falls into the Brahmaputra or the Irawady. The connection between Thibet and China, and the precarious hold possessed by the latter on the Thibetians, is explained, as well as the complicated policy by which the Chinese endeavour to consolidate their power. Even the mighty Yang-tze-kiang is traced into northern Thibet, where its waters are supposed to rise in the Hyerborean lake of Koko-nor.

Sefan is described as properly lying between Thibet and China. In the northern portion of this mountainous region are some of the

sources of the Yang-tze-kiang. Its mountains are wild and picturesque, the country generally desolate, and covered with perpetual snow, except in some of the intervening valleys. South Sefan, bordering on Birmah and Yunnan, is very little known; the savage tribes avoid all intercourse with strangers. The inhabitants of Sefan generally belong both to the Thibetian and Tartar races; its early history is mixed up with that of Thibet, subsequently with that of China. Dr. Gutzlaff's Memoir ends with an account of some of the authorities and works from which his information was obtained.

Mr. John Studdey Leigh, to whom we were already indebted for an account of the river Zambese, has given us an interesting description of Mayotta and the Comoro Islands, visited by him while passing through the Mozambique Channel, a few years back. They are situated near the northern entrance of that channel, between Cape Amber, the extremity of Madagascar, on the one side, and Cape Delgado, on the coast of Africa, on the other. Some of them have been already described, but attention has only lately been directed to Mayotta in consequence of the proposed colonization of it by the French.

Mr. Leigh ascended the peak which forms the most interesting feature in the scenery of the main island of Mayotta. The country near the coast is described as generally fertile and well wooded; towards the centre of the island all signs of habitation disappear. Few traces of animals were perceived; amongst the numerous birds, pigeons of more than one kind were abundant. The ascent of the peak was attended with great difficulty; the rocky nature of the ground increased the inconveniences occasioned by sharp-leaved cutting grasses and tangled creepers. Lemurs were found in great abundance near the summit, calculated at 2000 feet above the sea, and clothed with ferns of great beauty, and other unknown plants. The Memoir is interspersed throughout with many interesting details of the manners and customs of the inhabitants, from whom Mr. Leigh appears to have received all the hospitality and assistance he required.

From Mr. Edward Higgin we have received an account of the country, products, and appearance of the island of Rodriguez, situated near the centre of the Indian Ocean; it is one of the dependencies of Great Britain, and is at present under the jurisdiction of the Mauritius, from which it is distant about 8° to the eastward. It is reported to consist principally of granite, its extent being about 12 miles from east to west, and its width varying from 3 to 6 miles. The climate is mild, notwithstanding its tropical position, and the quantity of rain that falls is considerable. Vegetation is abundant and luxuriant, and

most European and tropical fruits come to perfection. The population as yet is small, being under 300, a mixed breed of African and Madagascar races, and in the lowest state of degradation. The island is partly surrounded by extensive coral-reefs not yet sufficiently surveyed.

Mr. James Skene has communicated to us an interesting paper on remarkable localities on the coast of Epirus. Even within the basin of the Mediterranean there is still much scope for the investigations of an enterprising geographer. The subject of comparative geography is far from being exhausted. Mr. Skene, by the unexpected discovery of a remarkable fountain or spring of fresh water rising up in the sea, resembling the Deine of Argolis, described by Pausanias, who says that a similar phænomenon existed near Chimerium, has most satisfactorily identified the site of the ancient harbour of Chimerium, in which the Corinthian fleet took refuge after its defeat by that of Corcyra, with the modern port of Agio Janni. Hitherto Chimerium had been identified with Arpitza. Mr. Skene also supposes Parga to represent the ancient Toryne, or Torone, where Octavianus anchored his fleet when proceeding to the straits of Actium to offer battle to Mark Antony. Another harbour, 5 miles south-east of Parga, now called Porto Phanari, is supposed, and not without good reason, to correspond with the Glykys Limen of the ancients.

Rear-Admiral Sir Francis Beaufort has communicated to us an interesting memoir by Captain Graves, well known for his long and active exertions in the Mediterranean survey, respecting the island of Skyros, one of the most southern of the Cyclades. In respect to its scenery and capabilities, this island is described as far superior to the rest of the group. Colonel Leake had already given an account of most of the antiquities of the island. Its productions are various, and for its size considerable in amount. During the last 15 years its population has increased from 2000 to 2630, yet arable land is so abundant as compared with the population, that one half of the cultivated portion of the island is allowed to lie fallow every year. The second portion of the Memoir is devoted to a nautical description of, and sailing directions for, the island. The coast is generally rocky and inaccessible, rendered more so by a group of small islands called the Pothies, the favourite haunt of pirates. Other small islands also lie off the coast in different directions. The highest portion of the island, Mount Cochelas, is said to be 2566 feet above the sea, surrounded by wooded hills. The only good anchorage is in the bay of Kalamitza. A few ancient remains are also described as existing, not in very good condition, in some parts of the island.

We have also received from the Hydrographical Office a full account of the volcanic group of Santorin, by Lieutenant Leycester, R.N., employed on the survey of the Mediterranean. The peculiar form and volcanic features of this group of islands have been long known, and have been well described by Von Buch and Ritter, the latter of whom has recently published a new map of the island, and also by MM. Boblaye and Virlet in the second volume, part ii., of the 'Expédition Scientifique de Morée,' undertaken by the French government. It has long been quoted as one of the best instances of a crater of elevation. The chief merit of the paper now under consideration consists in the great detail with which all the different portions of the shores and smaller islets have been examined and laid down, the statistics of the island recorded, and its antiquities described.

The principal physical features mentioned are the getting soundings in places where none had hitherto been obtained, and the confirmation of the gradual rise of a shoal near the centre of the bay, which may perhaps indicate the apex of a new cone rising up in the centre of the ancient crater.

In my address from this chair last year, I noticed the information we had received respecting the Russian expedition to the Northern Ural, under Colonel Hoffman. This year Admiral Lütke has communicated to us, through Sir R. Murchison, a slight sketch of its further proceedings in 1848. Leaving Tobolsk, Colonel Hoffman descended the Ob in a boat, and on the 27th of June reached the mouth of the Voiker, a small river rising in the Ural, and falling into the Ob in lat. $65^{\circ} 50'$. They ascended the valley of the Voiker, and having crossed to the western side of the range, proceeded north along the foot of the mountains. This part of the range is described as sterile, and almost entirely devoid of trees. The highest summit north of lat. 66° is not more than 3000 feet high. Here the expedition was in no small danger from an apparently trifling cause. The swarms of gnats so tormented the reindeer in crossing a low marshy district of nearly 2° , that the animals were rendered quite helpless; many died, and on one day they lost 20. On the 8th of August the travellers reached the banks of the Ussa, lat. $67^{\circ} 46'$: and on the 27th the banks of the Kara. Colonel Hoffman was surprised to find that about the parallel of Obdorsk the Ural chain turns suddenly to the east for nearly 30 or 35 wersts, after which it recovers its original direction of north and south, which it keeps to lat. $68^{\circ} 29'$, when it rapidly declines towards the marshes. From thence to the sea are merely low rocky hills, extending parallel to the sea from east to west in the form of dunes.

Colonel Hoffman ascended the hill which forms the northern limit of the chain, and is surrounded on three sides by low marshy lakes.

From Dr. Thomson, of Glasgow, we have received some extracts from letters of his brother, Dr. Thomas Thomson, assistant-surgeon on the Bengal establishment, and one of the commissioners appointed by the Indian government to settle the boundaries of Thibet with the agents of the Chinese government. These extracts give a description of a journey from Leh in Little Thibet to the Kara Korum Pass in the mountain range between Ladik and Yarkand. Some portion of this route up the valley of the Nubra had been already visited and described by Moorcroft. The route, although frequented by traders, is impassable during the greater part of the year. In one portion of it Dr. Thomson describes some magnificent glaciers, the passage of which was attended with much difficulty. Dr. Thomson describes one of the upland plains over which he travelled in this mountainous region as being 18,000 feet above the sea; this, he presumes, may be the highest flat plain on the globe. The elevation of the highest point of the pass was 18,600 feet, which on the 19th of August was free from snow; but glaciers had been crossed at lower elevations. The general height of the range is estimated at 20,000 or 21,000 feet. Dr. Thomson also made many botanical discoveries; but although he found several new species, the general character of the vegetation was that of Europe and North Asia. No vegetation was seen at the summit of the pass: but the number of flowering plants observed above 17,000 feet was 16, chiefly belonging to the family of the Cruciferae.

We have also received some observations by the late Captain Carless of the Indian Navy, on the course of the hurricane which occurred on the Malabar coast in April, 1847, and on the probable position of the unfortunate steam-frigate *Cleopatra* at the time, drawn up from information obtained from the log-books of various vessels. The result of the investigation has been to confirm the opinions already entertained respecting the rotatory nature of these violent storms.

Professor Chaix of Geneva has forwarded to us through our late secretary, Colonel Jackson, a paper on the valley and delta of the Nile, and its height in different places above the level of the Mediterranean. The paper is accompanied by a long series of barometrical and thermometrical observations made at various spots, and enters into the consideration of the question of the extent, to which the Nile now rises as compared with former times, and how far the general level of the country has been raised by the muddy deposit of the river. With regard to the latter question, the probability is that there has been no

change of any consequence during historic times either in the outline of the coast and of the mouths of the rivers, or in the extent of the delta itself. With regard to the question of the amount of rise in the waters of the Nile necessary to flood the country, which in the time of Herodotus was 15 or 16 cubits, equal to about 8 metres, it appears that this is the amount still requisite, and that the average actual rise of the waters most beneficial to the crops is 8 metres, thus proving both the accuracy of Herodotus, and that no change has taken place in the level of the country during the last 23 centuries, and dispelling the alarm of those who have feared that the land, gradually raised by the muddy deposits, would no longer be exposed to the beneficial influence of the annual inundation.

As connected with the prosperity of our distant colonies, and likely to lead to further researches in the interior, we have heard with pleasure of the establishment of cotton-plantations at Port Natal and its vicinity, the plant being indigenous, and having been also obtained from foreign seed, as communicated to us in a letter from Captain Stokes to the Admiralty.

We have received through the Indian government another interesting paper by Lieutenant Cruttenden, of the Indian Navy, describing the western or Edoor tribes inhabiting the Somali coast of N. E. Africa, and other tribes resident on the banks of the Webbi Shebeyli, commonly called the river Webbi. In the course of his Memoir, Lieutenant Cruttenden, besides a full account of the people, gives an account of the physical geography of the country and its valuable products, coffee, gums, frankincense, &c. Remains of ancient watercourses bear evidence of the former existence of inhabitants more civilised than the present occupiers of the land. Graves and gravestones tell the same story; but no tradition exists in the country as to the people by whom they were erected. The most interesting portion of Lieutenant Cruttenden's paper is a description of an expedition to the summit of the lofty range of Eyransid, nearly 6500 feet above the sea. This mountain range rises abruptly from the coast about 50 miles E. of Berbera, and then slopes gradually to the S.S.W. towards the celebrated valley of the Wadi Nogal, abounding in gums of every description. The vegetation on these mountains is described as truly magnificent, and as affording an inexhaustible field of research to the botanist. The Wur-sungeli tribe who inhabit this district are said to look upon theft with abhorrence,—an important feature in the examination of an unknown country. Lieutenant Cruttenden recommends travellers wishing to ascend the mountain range of the Jebel Al Wur-sungeli to make the

small port of Doorderi, E. of Ras Kori, their starting-place. The paper concludes with a description of Ras Hafeon, the most eastern point on the coast, and situated in the territory of the Mijjertheyn Arabs.

From Mr. Cooley we have had a communication entitled 'Brief Abstract of a Memoir on the Cinnamon Region of Eastern Africa,' in which he points out the importance of the aromatic productions and gums of various kinds of this part of Africa, and shows by a careful and critical analysis of ancient authorities the probability that the spices and incense consumed in such large quantities by the ancient people of Egypt, Greece, Syria, and Rome were derived from this part of Africa, and not from Arabia Felix, or Yemen, the country of the Sabæans, and that the Sabæans were in fact only the carriers, not the producers or growers of these aromatic drugs. He also points out the various causes of the changes which the commerce of the country underwent at different historic periods.

Mr. Cooley concludes by observing that, if the design be entertained of exploring this highly interesting country (the north-eastern horn of Africa), the labours of such an expedition, having for its object to become acquainted with the aromatic productions of the land, might be confined within the angle cut off by the Wadi Nogal, or to the limestone mountains of the Wur-sungeli and Mijjertheyn tribes.

A communication by Lieut. Gordon, on the discovery of rich seams of workable coal in the island of Formosa, has also been read to you. In the present day, when steam-navigation is extended all over the world, the discovery of new mines of coal in different quarters of the globe assumes an importance and an interest which the geographer cannot overlook. The future progress of navigation and discovery will become dependent on sufficient supplies of this material, and we therefore hail with satisfaction its discovery in such various and distant lands. Vancouver's Island, the Straits of Magellan, Borneo, the continent of India, the Presidency of Bombay, no less than that of Bengal, all abound with this most useful mineral.

Another communication read at one of our evening meetings relates to the erection of a lighthouse on Cape Agulhas, the most southern point of the African coast, about 100 miles E.S.E. of the Cape of Good Hope, and to the survey of the coast and numerous reefs of rocks in its immediate vicinity.

From Sir George Seymour we have received, through the Admiralty, a communication entitled 'Notes on the Islands of Quibo and Cocos, and two of the Galapagos.' Quibo is nearly inaccessible, from the

steepness of the cliffs and the tangled vegetation, the island being luxuriantly wooded, and abounding in every tropical production. Cocos is well supplied with wood and water, and plenty of fish. It is a picturesque island, but possesses no secure or extensive harbour. Chatham Island and Charles Island belong to the Galapagos group. The former used to supply the American whalers with terapins, or land tortoises. • These animals have been nearly destroyed near the seashores, and the settlers are obliged to seek them in the interior, described as more fertile than the coast. In Charles Island these animals are also nearly exhausted. Here, too, tropical productions grow luxuriantly. This paper gives no confirmation of the report of coal having been found on this island, as stated by Dr. Coulter, but rather discountenances the idea.

In another communication forwarded to us by the Admiralty, Sir G. Seymour has stated that the harbour of Esquimalt, near the new establishment of the Hudson's Bay Company, Fort Victoria, in the Straits of S. Juan de Fuca, was described to him as capable of receiving ships of the line in security, and as a valuable addition to the resources of the island.

A report has also been received from Lieut. Lysaght, R.N., respecting the trade and resources of the river Nuñez, communicated to us by the Admiralty, and containing some statistical information interesting in a commercial point of view, as well as accounts of the native tribes inhabiting or trading on the banks of the river.

An interesting communication was lately read from Lieut. Forbes, R.N., describing the discovery of a written language in use amongst the natives on part of the west coast of Africa, at Bournea, near Liberia. It is the Vei language, resembling that of the Mandingos rather than the Kroomeu's. Some slight vocabularies of this language, as well as its numerals, were already known to African philologists and missionaries. The writing is reported to be of recent introduction, and is supposed to have been brought down from the interior: it is a phonetic language, and, as in Chinese, the different characters represent syllables. It is impossible to overlook the importance of such a discovery, and the advantage to which it may be turned in introducing civilization and Christianity amongst the negro populations of Africa.

A long and elaborate paper by Capt. Vidal, R.N., giving a detailed description of Santa Maria and the Formigas Rocks, in the Azores, has also formed the subject of one of our evening meetings.

EUROPE.

In detailing the progress of geographical science during the past year, I have adopted the same arrangement as on a former occasion, believing it to be one which best meets the objects of such an Address as the present, and that it has already met with your approbation. I have endeavoured simply to describe the facts which have come under my notice, and have generally avoided introducing any opinions of my own. Notwithstanding many omissions, of which I am but too well aware, I fear it has extended already to an unwarrantable length.

The survey of our own coasts, interrupted for a while by causes alluded to in my last Address, has, during the past season, been actively resumed, and is now rapidly proceeding. We are informed that Capt. Sheringham, having completed the south side of the Isle of Wight, is now extending his work along the coast to the westward. Capt. Bullock, having finished the coast of Essex and examined that of Kent eastward of Dungeness, is now continuing his survey from Dungeness towards Beechey Head. Commander Otter, having last season surveyed Stornoway, Loch Inver, and the northern part of the Minch, is now employed in that channel connecting the shores of Scotland with the Hebrides.

In consequence of important changes which have taken place in the banks and passages of the Bristol Channel, since Capt. Denham's survey, Capt. Beechey has been employed in its re-examination. He has also made many interesting observations on the tides in continuation of those already made in the Irish Channel, an account of which has been published in the Philosophical Transactions. He will, during this season, resume his labours in both these departments.

In the prosecution of the survey of the east coast of Ireland, Capt. Frazer has recently been engaged on the coast between Cape Carnsore and Waterford, and in the survey of Waterford itself. He will, during this season, continue his operations along the coast to the westward. Capt. Wolfe has recently been employed on the south coast of Ireland, between the Old Head of Kinsale and Mizen Head. He will this year remove to Valentia, to examine that harbour and its adjacent coast. Commander G. A. Bedford, having carried his operations as far northward as Slieve Head, will proceed towards Clew Bay; while Commander Beechey, having completed the examination of the inner portion of Clew Bay, with its numerous islets, will proceed along the coast towards

Achil Head; and lastly, Commander Williams, having completed the survey of the Isle of Man, is now removed to Cornwall, where he is commencing the examination of Mount's Bay.

Hydrographical Office.—Many valuable charts have been published by the Hydrographical Office, including various parts of the Mediterranean, the West Indies, the Canaries, England, Ireland, Australia, North America, New Guinea, West Coast of Africa, the Maulmain River on the coast of Tenasserim, Labuan, &c.

Ordnance Survey.—The Ordnance Survey of Lancashire, on the 6-inch scale, has made considerable progress; 29 sheets have been published since May last, making 69 in all published up to the present time. In the meantime the survey of the 1-inch scale has been suspended until the larger one of Lancashire shall have been completed; but it is not intended, as was once supposed, to supersede the 1-inch by the 6-inch scale for the North of England: the public advantage of these maps has been immensely increased by the great reduction in their price lately made. This result has been mainly brought about by the application of the electrotyping process to the multiplication of the copper plates at a very trifling cost.

Considerable progress has also been made in the 60-inch Town Survey of England. It is, I believe, generally known that the principal towns in the country are to be surveyed on this scale. Of Liverpool 26 sheets are published out of 50, of which the whole town will consist. Those of Chorley, Clitheroe, and Haslingden are complete; of Windsor and Southampton the plans are already drawn. The Survey of London has also made considerable progress. When completed it will cover about 900 sheets, 3 feet by 2 feet. They are admirably executed; and, when we consider the scale, must afford facilities for improvements in building and drainage at a comparatively small preliminary expense never before estimated.

Maps.—Some neat and useful maps for the education of the poor have been lately published by the National Society, under the superintendence of the Rev. S. Clark, Vice-Principal of St. Mark's College. Amongst these I may mention a set of six statistical maps of England, of which four are already published. Of these six maps, two are devoted to the physical geography of England and Wales, two to the political geography of the British empire, and two to its historical geography. Amongst them is one showing the British possessions on a uniform scale.

Another series, published by the same Society, consists of large skeleton maps, showing the great natural features of the country, and

indicating different elevations of the land by different tints, so shaded as to leave the high land nearly white. Mr. Clark has also published a new and useful series of outline maps and blank projections for the use of schools.

Mr. Petermann has nearly ready for publication two maps, forming the first part of his Geographical and Statistical Atlas of the British Empire. The maps are, 1. A hydrographical map of the British Isles, exhibiting the geographical distribution of the inland waters. 2. A statistical map of the British Isles, showing the distribution of population; the execution is excellent, and the information is brought down to that of the last returns; the scale is 1:100,000. Mr. Petermann deserves the greatest credit for undertaking a work of so much importance and requiring such unwearied exertions; he is especially entitled to the support of the British public. The advantages of this application of geographical science to the purpose of statistical information are as yet hardly sufficiently appreciated in this country; the principles on which Mr. Petermann has proceeded, and the objects he has had in view, are recorded in a paper by him read before the British Association at its Meeting at Swansea last year. Both Alexander von Humboldt and Professor Ritter have expressed themselves as highly pleased with Mr. Petermann's performances.

Physical Atlas.—I noticed in my Address last year the publication of the first number of a Descriptive Atlas of Astronomy, and of Physical and Political Geography, by the Reverend Thomas Milner, assisted by Mr. Petermann for the physical maps. I am happy to be able to announce that seventeen parts are now published; the amount of information they contain is remarkable for their size and extremely moderate price. The letter-press by which they are accompanied contains many interesting chapters on those subjects more immediately connected with physical geography:—viz. the solar system, celestial and terrestrial phenomena, the sidereal heavens, physical geography, including geology, hydrography, and meteorology, organic life, including as yet botanical geography, and zoological geography.

I have also to announce the publication of the three first numbers of another Atlas of Physical Geography, also conducted by Mr. Petermann, with descriptive letter-press, embracing a general view of the physical phenomena of the globe. It is to be completed in six numbers. It should, however, be observed that many of the maps are the same as those published in the last-mentioned work; and that the letter-press, as far as it yet goes, is only an improved edition of those chapters on geology and hydrography mentioned in that work.

Another Physical Atlas is in course of publication in Edinburgh, by Mr. Alexander K. Johnston; being, in fact, reduced from the large edition, the completion of which was announced last year. It is intended for the use of colleges and academies, for which its size, imperial quarto, is well adapted. The first two parts are already published, and their execution is excellent. It is called 'The Physical Atlas of Natural Phenomena.'

The same talented author has also recently published a neat and compact Atlas to illustrate Alison's 'History of Europe.' The size is small and convenient; which, as the districts represented in each sheet are generally of limited extent, does not affect the clearness and precision of detail necessary for such a specific work.

Amongst the many adaptations of art to the delineation of physical geography none are more interesting or likely to prove more useful than the modelled relief maps of Mr. Carrington, an engineer many years employed in the surveys of New Zealand. This gentleman, besides several smaller models, has made one of the country round Manchester and the Peak of Derbyshire, on the exact scale of the Ordnance Survey, taking indeed the Ordnance map as the basis of his construction; the vertical scale, as compared to the horizontal scale, is only as 6 to 1. Mr. Carrington's system is described as being extremely rapid in its execution, and it is impossible to imagine any method by which a more correct idea of the different features of the country can be obtained. It would, indeed, be a work worthy of our country if the Government would imitate the liberality of the King of Prussia, and so far, at least, as the Ordnance Survey has been completed, would direct the modelling of the whole kingdom on the same scale. Some of Mr. Carrington's smaller portions are on the scale of 20 chains to an inch: a scale sufficient for the introduction of the smallest physical character, and adapted to all purpose of agricultural economy.

Captain Ibbetson's model of the Undercliffe, Isle of Wight, is well known for its beauty and correctness. I am happy in announcing that he has now finished a small model of the Isle of Wight; also a large one of the same locality, as well as one of the county of Shropshire, which are for publication at very moderate prices.

Mr. Mollison has published a planisphere on a new and ingenious principle; so contrived, by means of moveable circles and graduated indices, as to find and point out at once the relative positions and appearances of the stars at given hours and days, as well as the declination and azimuth of the different celestial bodies; besides giving

much information brought together in a small and compendious form.

I have much pleasure in announcing the publication of a second edition of Mrs. Somerville's interesting volumes on Physical Geography; an edition by which the claims of the authoress to our thanks are very materially increased. The additional matter contained in these new volumes amounts very nearly to a third of the whole work. Many portions of it have been entirely re-written, and some new chapters have been introduced on subjects of great interest. Amongst these I may perhaps be permitted to mention some of the most important:—

The introductory chapter in the first volume is enlarged by many important observations respecting the position of the earth in the solar system, and the laws by which that position is maintained; the description of the surface of the earth is further elucidated by an account of mineral veins and fissures; in addition to which we have an entirely new chapter on the nature and character of mineral veins, and the various occurrences of metalliferous deposits, and the different circumstances and products connected with them. The physical features and flora of Central and South America are enriched with a mass of new and valuable information; and particularly I may mention that the whole question of meteorology is discussed in an admirable and philosophic manner. Indeed, it may be safely asserted that there is not a chapter in the book which does not bear evidence of the attention which has been paid to it, and of the desire shown to render the work really useful, by bringing up the information on every subject to the latest researches.

We learn from Paris, through Colonel Lapie, under whose superintendence the topographical and geographical labours of the Ministry of War are carried on, that the 13th number of the Map of France, consisting of 10 sheets, has just been completed, making 130 sheets already published; 49 more are being engraved, and 19 are laid down and ready for the engraver. There only remain 60 sheets to be laid down to complete the work. Preparations are also making for publishing this map on a reduced scale of $\frac{1}{3200000}$, in 35 sheets, many of which are already engraved.

A subterranean map of Paris is also in course of construction, on which are represented all the labyrinthine galleries of the catacombs and quarries.

I alluded last year to a work about to be published by M. Jomard,

under the title of 'Monuments of Geography,' being a collection of maps of the Middle Ages. The Viscount de Santarem, one of our corresponding members at Paris, has just published the first volume of a work of a somewhat analogous description: it is entitled 'Essay on the History of Cosmography and Cartography during the Middle Ages, and particularly on the Progress of Geography after the great discoveries of the fifteenth century: to serve as an introduction and explanation to the atlas composed of mappemondes and portulans, and other geographical monuments from the sixth to the seventeenth century.'

The first numbers of this atlas were published in 1843. M. de Santarem has forwarded to us a list of all the maps subsequently published, forming a collection of fifty-six curious documents, commencing with the tenth and extending to the sixteenth century. Those of the tenth, eleventh, twelfth, thirteenth, and fourteenth centuries are almost exclusively mappemondes taken from ancient manuscripts preserved in European libraries, most of them of great interest. Amongst them are six card compasses, or tables of winds (*roses des vents*): two of them are taken from a manuscript of the tenth century. The last item in the list is as follows:—"56. Four parts of the famous mappemonde of Fra Mauro, of 1459, published for the first time of the same size as the original, with its numerous legends. The fifth part of this large mappemonde is now in the engraver's hands, and will shortly appear. It forms the first geographical monument of the third part of my atlas, which contains a series of the monuments and mappemondes subsequent to the great discoveries of the Middle Ages."

Another work, very similar in character to those of M. Jomard and Viscount Santarem, has also been announced, entitled 'Géographie du Moyen Age,' by J. Lelewel. The work consists of 99 maps in folio, engraved by Mr. Lelewel from the originals in various libraries on the Continent, some of which, particularly from the twelfth to the fifteenth century, are described as being of peculiar interest.

We learn from the *Comptes Rendus* that several French travellers about to proceed to various parts of the American Continent have applied to the Academy of Sciences for instructions as to those scientific investigations it might be desirable for them to undertake. Amongst them are M. Rossignon, about to depart for Central America; M. Chayet, for California, to examine the geology and mining industry on the part of the Government; M. Durocher, also going to California; M. Petit, to Chili; M. Desmadryl, to travel in the west part of the Cordillera of South America; and M. Duplessis, in Texas.

Switzerland.—Considerable progress has been made during the last year in the national survey of Switzerland, carried on under the superintendence of General G. H. Dufour. In addition to the two sheets (Nos. 14 and 17) already published, five more (Nos. 2, 6, 7, 10, and 21) have been completed, and are ready for publication. They comprise Basle, Soleure, Porentrui, the west of Neuchâtel, part of Savoy, part of Franche-Comté, and the extreme eastern parts of Grisons. Six more sheets are in a very forward state (Nos. 8, 9, 3, 11, 12, and 18), containing Schaffhausen, Aargau, the Simplon, Zug, Neuchâtel, Freyburg, Yverdon, Bern, Zurich, Glarus, and Schwyz. This survey has brought out many interesting facts regarding the physical geography of the country, as the height of the rivers at different points of their course, and consequent inclination, and the levels of various lakes above the sea. The eastern boundary of Switzerland has also been removed farther eastward than it had been placed in previous maps, and the canton of Grisons is thus found somewhat to exceed in extent that of Bern, hitherto deemed the largest in the Confederation.

Numerous other maps, partly geological and partly topographical, have been published during the last few years. I can only mention a geological and topographical map of Glarus, by Escher, on a scale of $\frac{1}{140,000}$; another of the same canton, with four vertical sections, by Messrs. Oswald-Heer and J. Blumen-Heer, at St. Gall, 1846; a map of the mountains north-east of the lake of Thun, presented last year by M. Rüttimeyer at the meeting of the Society of Naturalists at Soleure; five geological maps of the Jura, in different cantons—that of the canton de Vaud, by M. Lardy, is not yet completed. The scale of the whole Jura collection will be $\frac{1}{100,000}$.

Germany.—*Maps.*—The progress of the maps undertaken by the different governments of Germany has been much delayed by the political state of the country. We learn, however, that the following sheets have been published during the last year:—Prussia, four sheets (40 to 43) of the survey of the Rhine provinces, and one sheet (25) of that of the province of Brandenburg; Grand Duchy of Hesse, two sheets, comprising the district of Rennershausen; Saxony, twelve sheets of the geognostical map; Bavaria, three sheets of the great topographical atlas in 100 sheets.

A new edition of Reyman's large map of Germany, in 200 sheets, is about to be published in Glogau.

In the Ordnance Office of Berlin an attempt has been made to print the maps in different colours, to show the different features of the ground, and a proof of one of these maps, which we have seen, shows

how successful they have been in arranging the different colours. The plan might be carried still further, and might be applied with the greatest advantage in the case of geological maps.

Amongst the numerous maps published or completed during the past year in Germany, I may mention Spruner's 'Hand Atlas, for the History of the States of Europe from the commencement of the Middle Ages down to the present time,' consisting of 73 coloured maps, and more than 100 subordinate maps, plans, &c. This atlas is called the Second Part, because the author has been induced by numerous applications to add two more parts, to complete the series, which will then be—Part I., Atlas of the Ancient World, consisting of 26 maps; Part II., the Historical Atlas, just mentioned, of 73 maps; and, Part III., Atlas for the History of Asia, Africa, and particularly America, from the commencement of the Middle Ages, to consist of 8 maps. The two first livraisons of Part I. are published.

Also Stieler's Atlas, consisting of 83 maps.

In 1848 a new edition of Stieler's map of Germany, including Holland, Belgium, and Switzerland, and the surrounding counties, in 25 sheets, on a scale of $\frac{1}{800,000}$, has been published.

Berghaus' map of Asia, in 18 sheets, is nearly complete, all but sheets 1, 3, and 4; it is a work highly to be recommended.

E. v. Sydow's Methodical Hand Atlas, for the scientific study of the earth, of which 26 sheets are already published.

E. v. Sydow's School Atlas, in 36 maps, in 1848, is an excellent work, and well executed, at a most moderate price.

Besides these, the great physical atlas of Berghaus may now be said to be complete by the publication of the 17th and 18th livraisons during the past year; No. 17 completes the ethnographical series of the work, and No. 18 gives what is called the anthropological portion, as the conclusion of the whole work. It consists of four sheets, representing the distribution of the human races, and embracing the following interesting subjects:—Food; population in agricultural districts; remarks on the physical nature of man; distribution of diseases over the globe; influence of climate; course of cholera; clothing of different races; religion; occupation and governments according to their different forms.

Nor must I here omit to mention the Geographical School Atlas of Rudolph Gross; it consists of 21 maps, executed in coloured lithography with a degree of taste and finish which deserve the highest praise. Different heights are represented by different colours; the consequence of which is, that at the very first glance the physical fea-

tures of the country are perceived with almost the same distinctness and sharpness of outline as in a relief map.

Another map, which may almost be looked upon as the direct result of the political agitation of Germany, is the 'Nationalitäts Karte von Deutschland,' published by Kiepert, at Weimar, 1848. The different branches of the German or Teutonic race are represented by one set of colours, only slightly varying from each other, while another set represents the different Slavonian races by which they are surrounded on the east, and another represents the Lombard and Frankish nations on the south and west.

I must also notice the relief maps of M. Ravenstein. The art of constructing these useful and interesting maps has now reached a high degree of perfection. M. Ravenstein has presented to the Society an atlas of eight different maps in relief, ingeniously arranged so as to occupy a small space. He has also constructed for the King of Prussia a relief map of the Rhine country, including the Duchy of Nassau, on a scale of $\frac{1}{3000000}$, and covering a surface of 12 feet by 10: and he is about to publish a similar map of Germany on a smaller scale of $\frac{1}{3000000}$, of which the first part, comprising the Rhine Valley from Basle to Mayence, has lately appeared.

The lovers of historical geography will find some interesting remarks in Dr. Schmeller's work on Valentine Fernandez Alemão, and his collection of notices on Portuguese discovery in Africa and Asia before 1508, contained in a Portuguese MS. in the Royal Library at Munich.

The interesting work by Bernhard Cotta, entitled 'Letters on the Kosmos of Humboldt,' of which the first part only has appeared, deserves a passing notice. The object of the author, as stated by himself, has been to extend still further the influence of the Kosmos by carrying out its principles in detail, and by explaining with greater accuracy its broad generalization.

Spain.—From Spain we learn that Mr. Edward Chao is about to publish in one volume a work entitled 'Cuadros de la Geografia Historica de España,' or Sketches of the Historical Geography of Spain, from the earliest historical times down to the present day, with many maps, of different kinds. The 'Diccionario universal de Historia y Geografia' is completed. The 10th and 11th volumes of Don Pascual Madoz's 'Diccionario Geografico Estadistico Historico de España y sus posesiones de Ultramar' have been published, bringing down the work to the letter M. They have also published at Madrid charts of the coast of France, and of the sea of China, with the river and town

of Canton: a plan of Cabañas, in the island of Cuba; geographical maps of the provinces of Madrid, Alava, and Guipuscoa; and plans of Madrid and Seville.

Portugal.—In Portugal Mr. Frederic Perry Vidal has just published a geographical map of the kingdom of Portugal, corrected and enlarged, and divided into provinces, districts, and councils, its size being 48 inches by 28, to which the author has added not only the distances between the different towns in the eight provinces, but also the population of each town.

Sardinia.—We have received during the past year three more sheets of the map of the kingdom of Sardinia, published by the Etat Major. The work was to be completed in 1848 by the publication of the sheets of Chambery and Geneva, which will also be forwarded to us.

I have not been able to obtain any information respecting the progress of the different Geographical and Statistical Dictionaries publishing in Italy, except the single fact that Ripetti's Dictionary is finished.

Sicily.—I have to announce the publication of the third part of Sartorius v. Waltershausen's Atlas of Mount Etna. The admirable execution of the former parts of this work must ensure a hearty welcome to the appearance of any subsequent portions.

Dalmatia.—There are few parts of Europe so little known or visited as the countries lying between the Danube and the northern frontiers of Greece. Few countries also are so difficult to examine, or offer so many real dangers to the scientific traveller. We therefore hail with gratitude Sir Gardner Wilkinson's entertaining work on Dalmatia and Montenegro, containing an account of a journey to Mostar, in Herzegovina, with remarks on the Slavonic nations. This work also contains some interesting remarks on the origin of the religion and customs of the Slavonians and other people who inhabit these regions, a description of the interesting remains of antiquity, an account of the Slavonian dialect and languages, with remarks on the Turkish character in these provinces, accompanied by excellent illustrations.

Mr. Paton's work on a nearly similar region must also be mentioned, entitled the 'Highlands and Islands of the Adriatic; including Croatia and the southern provinces of Austria.' It contains many valuable contributions to our stores of geographical and ethnological knowledge.

Levant.—We are indebted to the Hon. R. Curzon for the publication of an account of his visits to the monasteries of the Levant. The

work is no less interesting for the light and agreeable style in which it is written, than for the amount of information it contains. I may particularly mention his visit to Mount Athos, in the description of which and of the surrounding country, so rarely visited by English travellers, will be found much to interest the geographer as well as the historian and the antiquary.

Bosphorus.—Baron Moltke has published a very neatly executed lithograph map of the Bosphorus in 4 sheets, comprising the northern fortified portion, from the castles near Constantinople to the light-houses at the entrance into the Black Sea.

Surveys.—The survey of the islands of the Archipelago, so long conducted under the able superintendence of Captain Graves, and which was nearly completed, has been for a while discontinued in consequence of an application for the survey of Cyprus, to which Captain Graves will now direct his attention. We may look forward to many interesting discoveries on these classic shores, from the talent which Captain Graves has always shown in the investigation of the relics of antiquity and in the prosecution of comparative geography.

Colonel Lapie has published and forwarded to our Society a new edition of his general map of Turkey in Europe and of Greece, in 15 sheets.

ASIA.

Russia.—Turning our attention towards Asia, we find the spirit of geographical investigation as active and as enterprising as ever. Few travels have of late caused greater interest in a purely scientific point of view than Adolph Erman's 'Reise um die Erde.' The first two volumes were mentioned some years ago from this chair by my friend Sir R. Murchison, who, in his Address, published in the 14th volume of our Journal, entered fully into Prof. Erman's merits when delivering to him the gold medal awarded by the Council, and I had myself the pleasure of announcing last year the appearance of a translation of them by Mr. Cooley. A third volume has since been published by Prof. Erman, containing an account of the coasts and sea of Ochozk and of his journeys to Kamtschatka in 1829. The map by which it should have been accompanied has unfortunately been delayed by causes over which the author had no control, and without it there is some difficulty in following his route through these unknown regions. The work is illustrated by several interesting plates.

Some idea of the difficulties of the country may be formed from the fact that the reindeer could only travel at the rate of one geogra-

phical mile in 157 minutes, owing, as our author says, to the nature of the ground between the Aldan and the great Ochota, between long. 133° and long. 140° E. of Paris, and in lat. 59° to 62°. Here they crossed the Capitan mountain, 3800 French feet above the sea. The characteristic forms of the mountains, the natural productions of the soil, the tidal phænomena, and those connected with meteorological and atmospherical changes, are fully entered into and described. Those observed at Ochozk are particularly interesting. The mean temperature during the summer was considerably warmer than at other places in the same latitude; at the same time the mean atmospheric pressure is much less than on the European coasts: a clear sky is rarely seen, and an almost perpetual mist prevails. The house-swallow only makes its appearance on the 2nd of June, whereas at Paris it is seen on the 10th of April, showing a remarkable dependence on the mean temperature of the air at both places; that at Ochozk having by the 2nd of June reached + 6° 9', that of Paris being already on the 10th of April + 7° 42'.

From Ochozk Professor Erman crossed over to Kamtschatka, thence along the Tigil coast, and over the central mountain-chain to Jelowka. Amongst the Kamtschatka inhabitants of Sedanka he remarked a peculiar physical feature, viz., the extreme smallness of their noses, particularly of the women, and suggests the possibility of the usual development of this organ having been providentially checked because it could only convey to its possessors most disagreeable impressions. A want of smell would be a real blessing to these ichthyophagic tribes.

Amongst the interesting mineralogical or geognostic features of Kamtschatka may be mentioned the crater of Baidar, from whence a stream of lava has flowed over the slightly inclined ground, so recent in its appearance as to be mistaken for an eruption of last year, were it not for the rich verdure and the aged trees covering the swelling undulations on either side, which have been thrown up by the liquid lava as if turned over by a ploughshare. Volcanic phænomena abound in Kamt-chatka, and the following chapters are taken up with an account of expeditions to the volcanoes of Schiwelutsch and Kliutschewsk, still partly active; the concluding chapters are devoted to an account of the navigation of the Kamtschatka rivers, and a journey to the southernmost point of the peninsula.

Professor Middendorf's name is so well known to all who frequent these rooms for his interesting journeys in Northern and Eastern Siberia, that I need do no more than allude to the progress he is making in the

publication of the results of that expedition. During the past year he has published portions of the first and third volumes. The first contains, besides the introduction, the climatology and geology of the country. The third volume is devoted to a description of the language of the Jakutes; two parts of this volume have appeared, one on the language of the Jakutes, the other a Jakutsk and German dictionary, the Jakutsk being written in Russian characters.

Within the last few days we have learnt from Colonel Helmersen that Colonel Hoffman had returned from his expedition to the Northern Ural towards the end of last year. He ascertained that the mountain chain does not reach the coast, but terminates abruptly at a distance of 50 wersts from the sea, the intervening space being low and marshy. From this point Colonel Hoffman returned to the river Kara, keeping along the chain of mountains called Pai-Khoi, already noticed and described by Count Key-erling. On his way back Colonel Hoffman proceeded to the sources of the Kara, thence by the Petschora to Oust Ilitch, Mesen and Archangel.

As soon as the different members of the North Ural expedition meet at St. Petersburg they will prepare the general account of their journeys. Numerous points have been astronomically fixed, and the ground has been accurately laid down. M. Strajew-ki, who was to have examined, during 1848, that portion of the Ural which lies between 66° and $64^{\circ} 30'$, had the misfortune to lose all his reindeer, and had great difficulty in escaping with his life from the mountainous desert in which he was thus left. Two of his companions perished in the mountains.

Amongst the works of Russian travellers published during the past year must be mentioned the journey of Theod. Basiner through the Khirgese Steppes to Chiwa, published in the 15th volume of the *Beiträge zur Kenntniss des Russischen Reiches und der angrenzenden Länder Asiens.* In forwarding this work Colonel Helmersen remarks that by the joint work of MM. Abbott, Shakespeare, and Basiner the principality of Khiwa is now so well known, that but little is wanting to complete our geographical knowledge of it. M. Basiner took his departure from Orenburg, of which he gives a full account, in company with Colonel Danilewsky, proceeding to Khiwa on a diplomatic mission to the Khan.

M. Basiner describes the appearance of the steppes between Orenburg and the Ust-Urt as singularly arid and deserted; and he divides it, according to its vegetation, into three districts, separated by the rivers Ilek and Ati-Dschaksy. In the southernmost of these districts he

describes a singular and anomalous plant occurring in great abundance, like a round pebble, quite detached from the soil, the *Parmelia esculenta*, first discovered by Pallas. But if the steppes are arid, the uplands of the Ust-Urt are still worse. The greater part of this region is stated to be a bare rock, extending to within a short distance of the Sea of Aral, lying 600 feet below it. The geological features of the rocks which compose this steep escarpment are described, as well as the fossils contained in them. On reaching the southern extremity of the Landan lake (the shallow termination of the Aral), the travellers descended into the plain watered by the Sarkrau, said to be the channel by which the Oxus formerly emptied itself into the Caspian. They crossed the Sarkrau at Kunä Urgendsch. The statement of the Tartar historiographer and ruler Abulghasi, that the branch of the Amudarja or Oxus, which flows by Kunä Urgendsch, formerly flowed into the Caspian, is conformable to the present traditions of the Chivans. It would even appear that there is a chance of its resuming its former course, inasmuch as that portion of the river which flows past Kunä Urgendsch is now said to flow a distance of two days' journey before it is lost or dried up in the desert, whereas formerly it only reached a few wersts beyond the city. Mr. Basiner regrets that he was unable to trace it towards the Caspian. From Chiwa he extended his travels as far as Chosarasp; and on his return from Chiwa to Orenburg passed through the delta of the Amudarja or Oxus, of which he has given an interesting account.

Aralo-Caspian depressions.—Colonel Helmersen informs us that considerable progress has been made during the last year in the examination of the Aralo-Caspian depressions. The results of the work of 1848 on the shores of the Lake Aral and in the Valley of the Yavartes (Syr Darga) are very important. On the shores as well as on an island discovered in the middle of the lake, cretaceous and eocene fossils have been found. The fossil remains found in great numbers in the steppes on the N. and E. of the Aral prove that this lake *at a time hardly removed from the historic period* covered a much larger surface than at present. Colonel Helmersen will fully enter into this question in the Travels of the late Mr. Lehmann from Orenburg to Bokhara and Samarcand, which he is now editing.

Although Dr. Basiner was unable to trace the course of the old bed of the Oxus to the Caspian, hopes had been raised that this interesting problem would have been solved ere now by the zeal and researches of an enterprising French traveller whose name has been more than once honourably mentioned in this room. It was the intention of M. Hommaire de Hell, who has already published an elaborate

work on the steppes of the Caspian Sea, after passing through Asia Minor, Armenia, and Persia, to have explored the arid steppes between the Caspian and the Aral Sea; he had arrived safely at Teheran, and was on the point of commencing his researches when disease suddenly overtook him. Overcome by the excess of physical and intellectual fatigue in the marshy provinces of Mazenderan and Atterabad, he fell a victim to the poisonous influences of the climate.

During the past year Dr. Grewingk, a distinguished naturalist and geologist, has explored the peninsula of Kanin, on the shores of the Frozen Ocean, N.E. of Archangel. He is about to publish an account of his discoveries.

Armenia.—M. Vivien de St. Martin has laid before the French Geographical Society an interesting report on the geographical history of the countries bordering on the Caucasus and Armenia, and on the principal desiderata for the geography and ethnography of the Caucasus. In this report M. de St. Martin has pointed out those portions of Armenia and of the countries between the Euphrates and the Tigris, including the neighbourhood of the lakes of Urumiah and of Van, to which the attention of geographers should be directed, to fill up the numerous gaps still existing in our knowledge of the geography of that portion of Asia, where so few points have been yet astronomically fixed.

India.—At a moment like the present, when such great efforts are being made, both in this country and in India, to open up the commerce of the interior of Hindostan, and to improve the communications of Western India, every attempt to ascertain the practicability of rendering navigable the rivers of India becomes of great importance. With regard to the Nerbudda, we find that this point has not been neglected by the Indian Government. In the *Transactions of the Bombay Geographical Society* for 1848 is a report of a trip down the Nerbudda from Mundlairsir to Baroche, by Lieut. H. L. Evans, with sketches of the Sansadara, and of a proposed road along the north bank of the Nerbudda to Dauree, by Lieut. Keatinge. At Hirn Phal Lieut. Evans found that the river had risen 18 feet above the usual hot season water-mark, and he met with no inconvenience in descending the rapids. We also find in the *Journal of the Asiatic Society of Bengal* for August, 1848, a journal of a passage down the same river, from the Dauree falls to Hirn Phal, by Capt. Fenwick, in charge of ten boats laden with coal from the rich mines of Hosungabad. The details of this passage are full and interesting; but the result of Capt. Fenwick's examination was, that the Nerbudda was in many

places useless for navigation, and he found, when the river was low, the rapids at Hirn Phal extremely dangerous. He also examined the Nerbudda by boats from Hindia to the falls of Dauree.

Punjab.—The interesting work of Capt. J. D. Cunningham, entitled 'History of the Sikhs,' will be found well worthy perusal and study, particularly in an ethnographical point of view. Capt. Cunningham filled several situations of trust in Upper India; for eight years he dwelt amidst this warlike and powerful people, and during this period had full and free access to all their public records. We have here an account of the extent, the climate, and the productions of the Sikh dominions, as well as of the many different tribes and races who inhabit or dwell within the limits of the Sikh possessions. These tribes are very numerous; I may mention as one instance, that in 1030 villages between the Jumna and the Sutlej, 41 tribes of agriculturists alone were found on an enumeration being made after our conquests had extended north of the Sutlej. At the same time a great assimilation of the principal races seems to have gradually taken place after successive immigrations; thus we are told, "The people of Cashmere have from time to time mixed with races from the north, the south, and the west, and while their language is Hindoo, and their faith Mahometan, the manners of the primitive Kush or Kutch tribes have been influenced by their proximity to the Tartars." The chief country of the Sikhs themselves is described as about Lahore, Amritsir, and Goojrat.

Thibetan Frontier.—I alluded last year to the expedition into Chinese Tartary undertaken by the Indian Government. The principal object of that expedition was to arrange with certain Chinese Commissioners the boundary-line between Ladak and the Chinese territory. In consequence of the absence of the Chinese Boundary Commissioners the British Officers were left to follow out their further instructions, viz., "that the Commissioners should individually use their best endeavours to increase the bounds of our geographical knowledge." With this view Lieut. Strachey continued his course down the Parang river, while Capt. Cunningham and Dr. Thomson proceeded to Haulé over the Lanak Pass. Capt. Cunningham and Dr. Thomson subsequently proceeded to Lé, the capital of Ladak; from thence Dr. Thomson proceeded to Nubra and the Kara Korum Pass, of which we have already had an account. Capt. Cunningham has recorded the result of his investigations in a series of letters addressed to Colonel Lawrence, which have been published in the Journal of the Asiatic Society of Bengal for 1848. In the course of his journey he visited Cashmere,

and had an opportunity of examining and measuring its principal architectural antiquities. These ancient temples of Cashmere are remarkable for great elegance of design combined with solidity of construction. Vocabularies of several dialects of the Dardú language were also obtained. Capt. Cunningham states that he has discovered the exact position of the ancient capital of Cashmere in Pandistan, a corrupt form of the Sanscrit name Puranadhistana, or Puranadhitan, *the old chief city*. Another important point in comparative geography is the identification of the ancient country of Bolor with the present Balti or Little Thibet. Valuable additions were also made to Sanscrit literature. In another letter Capt. Cunningham states his belief of having satisfactorily discovered the situation of Aornos in the vast hill-fortress of Ranigat or Ranigarh, immediately above the village of Nogram, 16 miles N. by W. of Ohind, and about the same distance from the west bank of the Indus. Ranigat corresponds in all essential particulars with the description of Aornos as given by Arrian, Strabo, and Diodorus.

Lieut. Strachey.—It was stated on a former occasion that Lieut. Strachey had succeeded, in 1846, in reaching the Lake of Manasarowara, situated far within the Thibetan frontier, on the northern flank of the Himalaya range, and the reputed source of the Sutlej and Sampoo. An interesting account of Lieut. Strachey's journey to the two lakes Cho Lagan (or Rakas Tal) and Cho Mapan (or Manasarowara) will be found in the Journal of the Asiatic Society of Bengal for last year. Lieut. Strachey crossed the Himalayan range very nearly due south from the lakes, starting from a spot near the Nepalese frontier. The elevation of the lakes he found to be 15,250 feet above the level of the sea. In another part of the same Journal Lieut. Strachey says, in giving an account of the lake Manasarowara, that one of the main results of his visit to Thibet was the having ascertained that the great plains had been evidently produced by lakes or seas, the great mass of them being perfect gravel to the depth of 800 or 1000 feet, to which extent the rivers cut into them. These papers are accompanied by an explanation of the elevation of places between Almora and the lakes of Gangri, in which the altitude of 71 places is given, and by a note on the construction of the map of the British Himalayan frontier in Kumaon and Garhwál by the same author.

In the number of the Journal of the Asiatic Society for April, 1848, will be found an itinerary from Phasi in Thibet to Lassa, with appended routes from Darjeeling to Phasi by Dr. Campbell, Superintendent of Darjeeling. Phasi is a frontier mart of Eastern Thibet, well

known to the people of Sikim and Bootan. They are stated to have been compiled with great care, and, in a country so little known and visited, deserve attention; though, of course, from the mode of their construction, they cannot deserve the same confidence as if the author had himself visited the country. Some notes and remarks by Mr. Hodgson are added by way of further elucidating the details.

Amongst many interesting papers in the Journal of the Asiatic Society of Bengal I may mention a short survey of the countries between Bengal and China, showing the great commercial and political importance of the Burmese town of Bhanmo on the Upper Irawady, and the practicability of a direct trade overland between Calcutta and China, by Baron Otto des Granges. Also an interesting account of observations made during several short excursions from Almorah to the Turaee and outer Mountains of Kumaon, by Major Madden, principally in a botanical point of view. We have also an identification of the Itinerary of Hwan Thsang through Ariana and India, by Capt. Alexander Cunningham, who describes it as the most valuable document we possess for the history and geography of Ariana and India, prior to the Mahomedan conquest. Another paper contains observations made when following the grand trunk road across the hills of Upper Bengal, Parus Nath, and in the Saone Valley, and on the Kymaon branch of the Vindhya Hills, by Dr. J. D. Hooker. These observations were chiefly made with the view of instituting a comparison between the vegetation of various areas differing in soil, elevation, and general contour, which were traversed by the author; they are chiefly meteorological, made with barometer, thermometer, and with the wet bulb for ascertaining the nocturnal radiation, the radiation from glass, the temperature of the soil, and the power of the sun's rays by means of a blackened bulb, and photometer, &c. &c.

Dr. Hooker has also added to our knowledge of the geographical distribution of plants by his discovery, in the mountains of the Eastern Himalaya, of many new and beautiful species of *Rhododendron*, so numerous indeed as to justify our looking upon this locality as the peculiar region of these interesting plants. They have been lately published and edited by Sir W. Hooker.

Indian Surveys.—The trigonometrical survey of India progresses satisfactorily. During the past year the measurement of the base of verification at Sonakoda, in the neighbourhood of Darjeeling, has been completed under the personal superintendence of Lieut.-Colonel A. S. Waugh, the Surveyor-General of India. In these operations the position and elevation of Darjeeling have been properly fixed, and the

stupendous altitudes of Chamalari and Kauchingga, the latter rearing its enormous height upwards of 28,000 feet above the level of the sea, and several other peaks almost equally elevated, have been trigonometrically determined. The details have not yet been received. Captain Du Vernet was employed in the triangulation of the Julinder Doab and of the Hill States of Mundi, Belaspoor, &c. Mr. J. W. Armstrong has completed the triangulation of the Gora meridional series. The surveying party under Mr. C. Lane, having completed the Maluncha meridional series, has been placed under the superintendence of Captain Renny, who will proceed from the Seronj base in a longitudinal direction westward to Kurrachee. The Calcutta meridional series under Mr. J. Peyton has been extended to its northern limit, and connected with the Sanakoda base of verification. Captain C. T. Hill started from the Calcutta base, and has carried on a triangulation as far as Tumlook; he will continue on until he connects it with the Madras survey near Ganjam. The topographical survey of the Bengal districts proceeds steadily. On the Bombay side of India the triangulation under the superintendence of Lieut. Rivers has been extended to the borders of the valley of the Bunnass, in lat. $25^{\circ} 10'$; it is proposed that he should proceed in an easterly direction towards Seronj, and effect a junction of the series with the longitudinal series conducted by Captain Renny, with whom he will then co-operate in accelerating his operations towards Kurrachee. In the Madras presidency the topographical survey is being continued in the Ganjam district by Captain Halpin, and in the Hyderabad territory by Major Morland. Sheet 89 of the Indian Atlas has been recently published, and also a new edition of sheets 69 and 70.

Marine Surveys.—Moulmein river and the Gulf of Martaban have been surveyed by Lieut. Fell, I.N.; this officer has also completed the survey of the Coromandel coast as far north as the Santapilly rocks: he is now engaged in surveying the coast of Pegue, between Cape Negrais and Martaban. Lieut. Montriou, I.N., has surveyed most of the harbours and anchorages on the coast of the Southern Konkan and Malabar. The survey of the S.E. coast of Arabia is far advanced under the superintendence of Captains Haines and Sanders, I.N.

• *China.*—In a small volume entitled ‘Transactions of the China Branch of the Royal Asiatic Society’ will be found an interesting article by the Rev. C. Gutzlaff on the Mines of the Chinese Empire, containing much information respecting the mineral wealth of China, especially in silver and gold; and describing the different localities in which they are found. Gold seems to occur in several places, and

to form a considerable source of revenue to the Chinese government. Besides the above, iron, tin, and quicksilver have also been found in considerable abundance.

A work in two volumes, entitled 'China and the Chinese,' has been published by Mr. Henry Charles Sirr, some portions of which had been already published in the Dublin University Magazine. Although the work principally professes to describe their religion, character, customs, and manufactures, some geographical information will be found in the chapters which describe the extent and population of the different provinces, their number and geographical position. The author recommends Chusan as a British colony, in preference to Hong-kong.

Mr. Aaron Palmer, Corresponding Member of the National Institute at Washington, has addressed to Mr. Polk a Memoir, geographical, political, and commercial, on the present state, productive resources, and capabilities for commerce of Siberia, Manchuria, and the Asiatic islands of the North Pacific Ocean, and on the importance of opening commercial intercourse with those countries. This memoir is extracted from his forthcoming work entitled 'The unknown Countries of the East,' and has been printed by order of Congress. It contains some valuable information respecting the harbours and islands of the North Pacific, and the coast of Northern China, Siberia, and Kamtschatka; also a description of the vast province of Manchuria, between China and Siberia, with an account of its principal rivers, particularly the Amúr and its tributaries. This river is said to have a course of 2280 miles before it discharges its waters into the Gulf of Saghalien. The author considers that there are no insurmountable obstacles to a direct communication being opened between the Pacific and the Baltic, and with the Caspian and Black Seas, by the route of this river and the navigable waters of Siberia. Truly a magnificent prospect to the future navigators of the Pacific; yet the author shows that a succession of navigable rivers exists by which, with the aid of two or three short *portages*, the whole communication may be effected. We have also an account of the island of Saghalien or Tarakay, 600 miles in length, and varying in breadth from 25 to 120 miles, celebrated for its fisheries and the facilities it affords for whaling expeditions, together with an account of the Russian and Japanese Kurile Islands, with many interesting geographical details and notices of the products of the various districts.

Palestine.—Some interesting remarks respecting the geography of Palestine will be found in a small work entitled 'Scripture illustrated

from recent discoveries in the Geography of Palestine,' by the author of the 'People's Dictionary of the Bible.' It is accompanied by a small map of Palestine, constructed and engraved by W. and A. K. Johnston, with corrections and additions of sections by Aug. Petermann, F.R.G.S. The recent discoveries of Russegger, Molyneux, Symonds, and the late American Expedition, are introduced and ably commented on in the text. It may, however, perhaps be suggested that the author, in discussing the course of the Jordan, the depression of the Dead Sea, and the direction of the valley of Wady el Arabah to the Red Sea, has somewhat hastily asserted the impossibility of the Jordan having once flowed down the Wady el Arabah into the Red Sea. The grounds of this assertion are, first, the depression of the Dead Sea and the Jordan below the Red Sea; and secondly, the elevation of the upper part of the Wady el Arabah 400 feet above the Red Sea.

The author appeals with great confidence to the works of Russegger, but he has omitted to observe that Russegger himself, alluding to the remarkable depression of the Dead Sea and the Valley of the Jordan, says, that this long line of depression may have been caused by violent volcanic action exerted on the limestone rocks, of which the greater part of Syria consists, occasioning a great fissure along the surface, by which the earth opened, and the ground sunk in from Djebel es Scheik to the watershed of Wady el Arabah. Into this fearful chasm the waters of the Jordan would flow, unable to cross the watershed of Wady el Arabah, even supposing that part of the country had not been raised simultaneously with the depression of the other, to which there is no physical objection; and it must be remembered that the sources of the Jordan are placed by our author on the plateau of Hasbeya, 1800 feet above the sea. He is not therefore warranted in stating that this question of the Jordan having once flowed down the Wady el Arabah is put an end to, or that the notion is exploded for ever on the authority of Russegger.

Colonel Lapie has laid down four of the sheets of his map of Turkey in Asia in six large sheets, on which he has been engaged for the last 40 years, and which still mainly occupies his attention. The remaining sheets, including Ispahan and Teheran, are progressing. Colonel Lapie has also recently published a new edition of his small map of Turkey in Asia, Persia, Affghanistan, Beloochistan, and Great Bokhara, in six sheets, and on a scale of $\frac{1}{3500000}$.

Dead Sea.—In the course of last year Captain Lynch, of the United States Navy, obtained permission from the Turkish government to explore in boats the Lake of Tiberias, the Jordan, and the Dead Sea. This

officer does not seem to have been aware that the result of the late Lieut. Molyneux's expedition, however fatal to himself, fully proved the feasibility of the undertaking, and that he had himself lived to furnish a full account of his expedition. In the absence of the official account, not yet published, some notices of that published in the 'Courier de Constantinople' may not be unacceptable. The report confirms the statement of Lieut. Molyneux as to the difficulties of the navigation of the Jordan, in consequence of its fearfully rapid currents; so great is the fall, that the difference of elevation between the two lakes is estimated by the American at 2000 feet. This is probably exaggerated. The expedition made the tour of the Dead Sea. The greatest depth found was 188 fathoms, which also agrees with Lieut. Molyneux's statement. The bottom of the lake is described as being flat and even, very deep in the northern part, and shallow in the southern. We must wait for the publication of the official report before we give credit to all the statements contained in the preliminary notice alluded to.

Mount Sinai.—Mr. John Hogg, a member of our Society, has just published an interesting memoir, already read before the Royal Society of literature, entitled 'Remarks and Additional Views on Dr. Lepsius's proofs that Mount Serbal is the true Mount Sinai; on the Wilderness of Sin; on the Manna of the Israelites; and on the Sinaic Inscriptions.' It is accompanied by a beautifully executed map of the Peninsula of Mount Sinai, drawn and engraved by Mr. William Hughes. The author shows, from numerous proofs collected from the testimony of ancient and modern writers, that the position of Mount Serbal, about 25 miles W.N.W. of Gebel Mousa and Gebel Katherin, has more claims to be considered the real Mount Horeb or Mount Sinai of Scripture than either of the other localities. This is also confirmed by the character of the mount itself, with its regular steps and numerous inscriptions, proving it to have been at some early age a place of holy pilgrimage. The subject is elaborately and fully discussed, the numerous authorities bearing on it quoted or referred to, and the whole literature of the question is carefully brought together and considered.

Indian Archipelago.—I regret to state that the survey of the S.W. Coast of Borneo and of the Natunas, which was making such satisfactory progress under Lieut. Gordon, has been suddenly suspended in consequence of the death of this officer. It seems uncertain whether it will be continued for the present.

Borneo, Celebes, &c.—In the 'Moniteur des Indes Orientales' will be found several excellent maps of the islands of Borneo, Celebes,

Sumatra, and other places, constructed by Baron P. Melvill de Carnbee.

AUSTRALIA.

I have also to announce the publication by Mr. Arrowsmith, during the past year, of a map of Eastern Australia, in six sheets, besides a new edition of his former map, in which the routes of Kennedy and Leichhardt have been laid down.

Dr. Leichhardt.—It was stated last year that this enterprising traveller, nothing daunted by the unsuccessful result of his attempted journey across the Australian Continent in 1847, was again about to attempt his adventurous enterprise. Dr. Leichhardt did in fact start on his great undertaking about the beginning of 1848, and we have received information of his progress as far as the Cogoon from Capt. Phillip King. He proceeded along the Condamine river to the Fitzroy Downs, which he describes as a splendid region, but fears that want of water will render it to a great degree unavailable. He crossed the Downs for 22 miles from E. to W., and came on Mount Abundance, passing over a gap in it with his whole train. He described his cattle as in excellent order, and his companions in high spirits. The date of his letter was April 3, 1848.

There is a report of a later date taken from the 'Maitland Mercury,' stating that Dr. Leichhardt had subsequently discovered a rich tract of country with grass and water, which he considered of such importance, that viewing the uncertainty of his further proceedings, he had himself returned 300 miles to give information of his discovery to the colonial authorities, leaving his party all well, and that he had subsequently returned to them.

Mr. Kennedy.—I stated in a note to my Address last year, that immediately after the Anniversary information had been received in this country respecting the result of Mr. Kennedy's expedition to trace the course of the Victoria river, supposed by Sir T. Mitchell to empty itself into the Gulf of Carpentaria. Mr. Kennedy's discoveries confirmed the apprehensions of those who had warned the public against a too implicit confidence in Sir T. Mitchell's anticipations. On arriving at the extreme point reached by the Surveyor-General, whence the Victoria was supposed to continue its course in a N.W. direction, Mr. Kennedy proceeded according to his instructions to follow the course of the river whithersoever it might lead him. The river soon separated into several channels; Mr. Kennedy kept along the right bank, apparently that he might not be diverted from the direction in which he was most anxious to trace the river. Its course, however, within a very short distance turned to the westward, and then to the S.S.W.

between the parallels of $24^{\circ} 17'$ and $24^{\circ} 53'$. Gradually the water disappeared, the different branches in succession drying up, until the expedition had great difficulty in finding enough for their daily consumption. The course of the river, now almost dry, subsequently became nearly due S. Mr. Kennedy was aware that the principal object in tracing the course of the river was to reach the Gulf of Carpentaria, but his instructions confined him to the river. He pushed on, lightening his baggage loads at various points, sometimes in want of water, at others finding large expanses which only proved the more delusive, getting farther and farther from the Gulf of Carpentaria, until the total want of water and food for his horses compelled him to return. Mr. Kennedy observes in his report, "I think there can exist but little doubt that the Victoria is identical with Cooper's Creek of Capt. Strutt. That creek was abandoned by its discoverer in lat. $27^{\circ} 56'$, long. 142° , coming from N.E., and, as the natives informed him, in many small channels forming a large one; the lowest camp of mine on the Victoria was in lat. $26^{\circ} 13' 9''$, long. $142^{\circ} 20'$, the river in several channels trending due S., and the lowest part of the range which bounds that flat country to the eastward bearing S. 25° E." Mr. Kennedy retraced his steps, recovered the provisions left behind, and on reaching the Warrego, determined to follow that river down to the S.W., with the view not only of finding an available country, but of adding to our knowledge of the range which divides the waters of the Darling from those of the interior. He followed the river for nearly a month, passing through luxuriant pastures and a well watered country. On reaching lat. 28° , however, the appearance of the country was completely changed, and at lat. $28^{\circ} 25'$ he was again without water, and reduced to the necessity of cutting his way by forced marches across the country to reach the Culgoa. On the Warrego the Victoria language is spoken, with only a slight difference in the pronunciation.

Shortly after his return to Sydney, Mr. Kennedy started on another expedition, for the purpose of exploring the interior of Cape York Peninsula and the country between the Belyando and the Gulf of Carpentaria. By accounts from Capt. Owen Stanley, who conveyed Mr. Kennedy and his party to Rockingham Bay, we learn that he landed there on the 24th of May last year, and having encamped for a few days to recruit his sheep and horses, started for the interior on the 4th of June in high spirits. They had to encounter a little swampy ground at first, but after that the country seemed clear. Mr. Kennedy's plan was to proceed to Cape York along the eastern side of the promontory. After recruiting his party there, where he was to receive a fresh supply of sheep and provisions, he would proceed to the south-

ward along the eastern shores of the Gulf of Carpentaria, to the mouth of Water Plaets river, as marked in Flinders' chart. He will ascend this river to ascertain whether it be identical or not with the river Mitchell discovered by Leichhardt. He will then cross the Nonda country till he reaches the Flinders river, which he will trace to its source, and thence return to the settled districts in the neighbourhood of Moreton Bay.

Surveys.—Captain Owen Stanley is making satisfactory and rapid progress in the survey of the coasts of Australia. He has already furnished the Admiralty with surveys of Moreton Bay, Port Curtis, and Sandy Island, and has re-examined the locality of Albany Island, near Cape York. He will this year continue the survey of the eastern coast between Cape York and Rockingham Bay, and of the dangers between it and the Barrier Reef.*

Captain Stokes, to whom the survey of New Zealand has been intrusted, has already reached the scene of his intended operations, and will now prosecute the survey of its shores and harbours, according to the seasons and the immediate requirements of the colony.

AFRICA.

The question of the sources of the White Nile still remains unsolved, notwithstanding the animated discussion which has been carried on between Dr. Beke and M. d'Abbadie. As I have stated on a former occasion, the principal point in discussion is, whither do the rivers discovered by M. d'Abbadie, and by him called Gebbe and Godjeb, flow? Are they the head waters of the Jubba, which falls into the Indian Ocean, as asserted by some African geographers? or do they fall into the Baro or Sobat, as maintained by Dr. Beke? or do they flow westward into the Shoa Berri of M. d'Arnaud, as M. d'Abbadie supposes? The only additional evidence published on this question since our last anniversary is that of Mr. Werne. A short paper on this subject was read at the meeting of the British Association at Swansea by Mr. Werne, together with some observations by Dr. Beke. Since then Mr. Werne's book has made its appearance, and has now been translated into English by Mr. C. W. O'Reilly. Mr. Werne was one of the companions of M. d'Arnaud in the expedition sent by Mehemet Ali in 1841, when they reached the Bari country, a little to the S. of the fourth parallel of N. lat., beyond which the shallow and rocky bed of the river prevented the further advance of the boats. Mr. Werne's work contains some

* Since the above was read, we learn that Capt. Stanley has returned to Sydney, having completed the survey between Rockingham Bay and Cape York. He was disappointed at not falling in with Mr. Kennedy at the latter place.

interesting details of the native customs and habits, and of the scenery and botany of the country. There is not, however, one word respecting the observations for positions, nor are there many scientific remarks throughout the book. The only evidence bearing on the Nile question is, that the natives of Bari stated that the river came from very far off to the S. I have not seen the original, but, judging from the translation, the tone and spirit in which the work is written are most objectionable, and the contemptuous and offensive remarks on his French fellow-travellers, even if they were justifiable in fact, are much to be regretted. With regard to the main question at issue, any further hypothetical discussion is in vain. Nothing can be known until the Godjeb is further examined and traced to its termination.

Snowy Mountains.—In the first Number of the 'Church Missionary Intelligencer' (May, 1849) is a narrative of a journey to Jagga, the snow country of Eastern Africa, by Mr. Rebmann, a member of the East African Mission, giving some information respecting the interior of the country, to which he penetrated for a considerable distance from Mombás, meeting with little or no opposition from the natives. The most remarkable feature in this expedition was the discovery, after 10 or 12 days' journey from the coast, of the mountains of Jagga, one of which, called Kilimandjāro, is reported to be covered with perpetual snow. This was most unexpected; and some idea of the elevation of this remarkable mountain may be formed from the fact that it is situated between 3° and 4° S. of the equator. It was seen by the party to the westward, and is laid down by them approximately in nearly the same latitude as Mombás. The river Gona, flowing near its base, is supposed, from the extreme coldness of its waters, to be derived from the melting of the snows of Kilimandjāro, the height of which has been roughly estimated at 20,000 feet. Much rain fell during their stay at Jagga, in the month of May.

The discovery of this lofty mountain has been assumed as giving additional strength to the arguments of those who look for the sources of the White Nile to the S. of the equator; but its comparative proximity to the coast, and the course of the rivers both to the N. and S., which would carry off a great portion of the waters resulting from its melted snows, ought to make us cautious in adopting such a conclusion without more detailed information. The instructions given to Dr. Bialloblotzky, previous to his departure from England last June, contemplated his attempting to penetrate into the interior of Africa from Mombás or its vicinity. We may therefore expect, in the event of his succeeding in his attempt, additional information on this subject from his exertions. The last accounts received of him were from Muscat,

whither he had proceeded from Aden, in the hope of finding a vessel to take him to Mombás.*

A map of the countries watered by the Nile has been published by Dr. Kiepert, during the past year, at Weimar: it includes Egypt, Nubia, and Habesch; and from Dr. Kiepert's well known abilities in such constructions it may fairly be looked upon as containing the latest and most accurate information respecting these countries.

Libyan Desert.—Mr. Bayle St. John has added to our knowledge of the geography and antiquities of North Africa by his graphic descriptions and interesting account of his adventures in the Libyan Desert and the Oäsis of Jupiter Ammon, which he lately visited. We have had so little information respecting these curious and isolated localities, where the prolific exuberance of nature shows itself by its efforts in the midst of the desert, that Mr. St. John's volume, despite a few slight blemishes, is one of the most instructive of the series of Mr. Murray's 'Home and Colonial Library.'

Algeria.—Colonel Lapie is engaged in correcting the map of Algeria. A map of the whole district of the Tell, reduced to $\frac{1}{250,000}$, is also in preparation, based on a triangulation made by French officers.

A map of the empire of Marocco has also just been engraved at Paris, under the inspection of Colonel Baudouin, on a scale of $\frac{1}{1,250,000}$, and a map of Tunis is projected on the scale of $\frac{1}{250,000}$.

We learn from the public papers that Colonel Ducouret, already known to the French public for his travels in Egypt, Syria, Abessinia, Darfour, Arabia, Persia, &c., now proposes to traverse the whole of the African continent from Algiers to Senegal, passing through Timbuctoo; from Senegal to proceed to the Cape of Good Hope, and thence through the whole African peninsula from S. to N., viz., from the Cape of Good Hope to Algiers. Having resided for sixteen years amongst the Arabs, by whom he is known as Hadji Abd-el-Hamed Bey, and having performed a pilgrimage to Mecca, he possesses many facilities and advantages for this hazardous undertaking not usually found in Oriental travellers.

Algoa Bay.—Some interesting remarks respecting this well-known but hitherto unsurveyed harbour of Algoa Bay will be found in the 'Nautical Magazine' for October, 1848. Its capabilities as a harbour seem hitherto to have been overlooked and its safety underrated.

* Since reading the above, intelligence has reached England that Dr. Bialloblotzky had arrived at Zanzibar in February last. The reception which he states that he met with from the British Consul, who not only raised objections to his journey into the interior, but refused to aid him in its prosecution, was most discouraging. When, however, he met with the same treatment from the missionaries, on what grounds have not yet been explained, he found himself under the necessity of giving up his expedition and of returning to Aden, from whence he has written to Dr. Beke (June 4).

M. A. Raffenel, a young Frenchman, who, on the occasion of our last Anniversary, was reported to be still prosecuting his adventurous journey in the interior of Central Africa, has returned to Paris within the last four months, unable to continue his undertaking in consequence of insuperable difficulties, which, however, have not yet been fully explained.

I noticed in my Address last year some of the principal results of Mr. Duncan's visit to Western Africa, and of his journey through the kingdom of Dahomey to Adafoodia. We may congratulate the cause of African geography and African civilization on the fact that Mr. Duncan is about to return to the scene of his former exploits, under the sanction and protection of the Government. From Mr. Duncan's intimate knowledge of the manners and habits of the people, from his personal acquaintance with many of the principal native chieftains, and from his well-tryed prudence under similar circumstances, we cannot but anticipate a great increase to our knowledge of the physical geography and products of the interior of this part of Africa. Mr. Duncan will endeavour, should a favourable opportunity present itself, to reach Timbuctoo. He goes with the best wishes of the Society, and their hopes for his successful return from his difficult and arduous undertaking.

Two German travellers in Africa have lately returned to Europe, from whom we may expect some interesting information. Dr. Peters has returned to Berlin from his exploring mission to Eastern Africa, after an absence of more than five years; and Baron von Müller has lately returned to Germany, after many years' residence in Egypt and other parts of Africa. He proposes again visiting Egypt, and establishing a colony far up the banks of the Nile, after which he intends crossing the whole African continent from east to west.

NORTH AMERICA.

Arctic Expedition.—In proceeding to describe the progress of geography on the western side of the Atlantic, it is with feelings of regret, now not unmingled with apprehension, that I have to state that no information has been received during the past year respecting Sir J. Franklin and his expedition. A report was in circulation some months ago that the firing of guns in the Polar Sea had been heard along the coast by natives, but it was never traced to anything positive or satisfactory. In the mean time it is some consolation to know that the Government have not been idle in their endeavours to obtain information of, or to render timely assistance to, the long absent expedition. A reward of 20,000*l.* has been offered by Her Majesty's

Government to any parties, whether by sea or by land, who shall have rendered efficient assistance to Sir J. Franklin, his ships, or their crews, or may have contributed directly to extricate them from the ice.

The Government have further consulted all those naval officers and others whose experience in the Polar Seas enabled them to give advice on the subject, as to the best means to be adopted for affording relief to the missing expedition. In consequence of their unanimous opinion, another vessel is ordered to proceed at once with additional supplies for Sir James Ross, and to desire that both the *Enterprise* and the *Investigator* should remain in the Arctic Seas for the purpose of carrying on the search for the *Erebus* and *Terror*. The *North Star* is preparing for this purpose under Mr. Saunders, who has already visited those seas under Sir G. Back. She is provided with instructions to be deposited in various places, some of which were already designated by Sir James Ross as places of rendezvous.

The Admiralty have expressed their willingness to place a ship at the disposal of the Liverpool Shipowners Association, for the purpose of being fitted for searching the Arctic Seas. The cost of preparing and fitting out the vessel would probably have to be defrayed by public subscription. It has been stated that the Russian Minister, Baron Brunnow, deeply interested in the fate of the Arctic Expedition, has urged his Government to send out exploring parties from the Asiatic side of Behring's Straits, and that this proposal will be carried into execution during the present summer.

In addition to these measures, it has been reported that the Government of the United States intend fitting out two vessels for the purpose of assisting in the search for Sir J. Franklin; one to proceed into the Arctic Seas by Behring's Straits, and the other by Baffin's Bay.

Instructions have also been forwarded to Captain Kellett, of the *Herald*, ordering him to proceed northward, with all the provisions he can stow, to join the *Plover*, and in the event of falling in with her to proceed in company direct to Behring's Straits. Captain Kellett is directed to supply the *Plover* with provisions, so that she may be enabled to pass the winter of 1849-50 in the Behring's Straits, and make such search for the missing vessels as was intended should have been made during the summer of 1849. As the time approaches when the provisions of the *Erebus* and *Terror* must be nearly exhausted, our interest in their fate becomes painfully excited, and we fervently trust that these combined operations for their relief may not have been undertaken in vain, and that before the expiration of the present year the gratifying intelligence of the safety of their gallant crews may reach the ears of their anxious countrymen.

The last information received from Sir J. Richardson and his overland party was from the Methy Portage, July 4, 1848: and the last accounts of Sir James Ross were dated August 28, 1848, at the mouth of Lancaster Sound.

The survey of the shores of Prince Edward's Island having been recently completed under Captain Bayfield's examination, he is now employed on those of Cape Breton Island.

Commander Shortland, who was assistant under Rear-Admiral W. F. Owen, in his recent survey of the Bay of Fundy, is about to resume the survey as its chief, and will continue his operations from the spot where the Admiral left off.

Canada.—Mr. J. Arrowsmith has just completed a new and magnificent map of Canada in 8 sheets, which I understand will be published before the end of the month. Its execution reflects the greatest credit on Mr. Arrowsmith, whose talents in this respect are too well known to need any further recommendation at my hands.

United States Coast Survey.—The report of the Superintendent of the United States Coast Survey shows the progress made in that Survey during the past year. From it we learn that the work has now been carried into every State but one on the Atlantic and Gulf of Mexico, and that preparations are making for extending it into the Pacific. Six sheet charts have been published during the year, and ten others are in the hands of the engravers. The entire number of Coast Survey maps already published is twenty-one. Six new shoals have been discovered during the season off Nantucket, and one in Chesapeake Bay. A large area, extending more than twenty miles south and east of Nantucket, is thickly beset with dangers, and as they lie in the track of vessels trading to Europe from New York, it is of the utmost importance that their positions should be accurately laid down.

Great pains have been taken to determine with the utmost precision the longitude of some one point in the United States as compared with that of Greenwich. For this purpose the Superintendent of the United States Observatory has availed himself of the opportunities afforded by the outward line of steamers between Liverpool and Boston. On the arrival of a steamer at Boston, the chronometers are taken to the Cambridge Observatory for comparison, and again on their arrival at Liverpool they are taken to the observatory at that place. In this manner 116 chronometers have been observed in 34 voyages.

I alluded in my Address last year to the intended employment of the electric telegraph for the purpose of determining the difference of longitude between different places. This plan is now extensively adopted. The difference between Washington and New York and Philadelphia was

determined in 1847. During the past year the difference between New York and Cambridge Observatory has been determined by the same method. The report describes the manner in which these experiments were carried out. Three different systems of observations have been employed: 1°. the absolute difference of time between the two places by transmission of signals; 2°. the comparison between solar and sidereal times at the two stations by the alternate transmission of signals in coincidence with the beats of the chronometers relatively marking solar and sidereal time; and 3°. by telegraphing the exact times of the transits of stars over each wire of the telescope of a transit instrument. The most absolute accuracy may be expected from the combination of these methods.

- Among the operations of the survey more immediately connected with the commerce of New York is mentioned the survey of Hell Gate; 4000 soundings and 614 angles with the sextant have been taken. The exploration of the Gulf-stream was also continued during the past season, and the temperature carefully observed at different depths. A new base-line has been measured on the coast of North Carolina, in connexion with the survey of Albemarle Sound.

The exertions of Lieut. Maury have been already before the public; he has completed the publication of his *Wind and Current Charts* of the Atlantic, in 8 sheets, and his proceedings have excited great interests in the United States. The important results of his discoveries, both as to scientific information and commercial advantages, are ably expressed in a report of a Committee of Congress, dated Feb. 22, 1849, in which his merits are deservedly acknowledged; and it is recommended that Government should assist his investigations by directing all Government vessels to make the same observations as have been already voluntarily made by merchant vessels.

Vancouver's Island.—Mr. Arrowsmith has lately published a new map of Vancouver's Island, in which the different natural features of the country, so far as they have been surveyed, as well as the locality of the coal-mines, are laid down. The importance of this discovery of good coal in the vicinity of a district which will undoubtedly attract for many years to come the surplus population of all the American states, and perhaps of Europe also, cannot be over-estimated. But a question may rise how far the prosperity of the island, or its condition as a colony, will be advanced by the cession, premature, to say the least of it, of this island to the Hudson's Bay Company. This question, as well as others relating to the political geography of our North American possessions, will be found fully

discussed in a work lately written by Mr. J. E. Fitzgerald, entitled 'Hudson's Bay Company and Vancouver's Island.'

California.—At the last Anniversary I anticipated that the war between the United States and Mexico would increase our knowledge of many portions of the American continent, particularly of the northern provinces of Mexico and California. We have lately received two interesting memoirs published by Congress, detailing the routes of different exploring expeditions in California and New Mexico by officers of the American army. These officers are Colonel Fremont and Major Emory.

The work of Colonel Fremont is entitled 'Geographical Memoir upon Upper California, in illustration of his Map of Oregon and California,' addressed to the Senate of the United States. In explaining the map by which it is accompanied, Colonel Fremont states that it embraces the whole western side of the continent between the eastern base of the Rocky Mountains and the Pacific Ocean, and between the Straits of Fuca and the Gulf of California, taking for its outline on the N. the boundary line with Great Britain, and on the S., including the Bay of San Diego, the head of the Gulf of California, the rivers Colorado and Gila, and all the country through which the line of the late treaty with Mexico would run from *El paso del Norte* to the sea. To complete the view in that quarter, the valley of the Río del Norte is added, from the head of that river to *El paso del Norte*, thereby including New Mexico. It is believed to be the most correct that has yet appeared either of Oregon or of Alta California, and is certainly the only one that shows the structure and configuration of the interior of Upper California. One of the principal corrections is thus stated: "In the map published in 1845 the western coast was laid down according to Vancouver. When the newly established positions (based on astronomical observations) were placed on the new map, it was found that they carried the line of the coast about 14 miles further W., and the valleys of the Sacramento and San Joaquin about 20 miles E., making an increase of more than 30 miles in the breadth of the country below the Sierra Nevada, viz. between that range of mountains and the Pacific. These positions were found to agree nearly with the observations of Capt. Beechey at Monterey."

The memoir then proceeds to show the character of the country, and to point out the great diversity which exists in different parts; for the present the author limits his observations to the two great divisions of the country which lie on the opposite sides of the Sierra Nevada. This mountain-chain is the grand feature of California: extending at a general distance of 150 miles from the coast, it divides

California into two parts, and the author explains the physical circumstances by which the two sides of the Sierra exhibit two distinct climates. E. of the Sierra Nevada is that anomalous feature of the continent called the great basin, about 500 miles in diameter each way, between 4000 and 5000 feet above the level of the sea, completely shut in by mountains, with its own system of lakes and rivers, and having no connexion whatever with the sea. The great Salt Lake and the Utah Lake constitute the most interesting features of this district, the one a saturated solution of common salt, the other fresh, viz., the Utah 100 feet above the level of the Salt Lake, which is itself 4200 feet above the level of the sea. So complete is the saturation, that 5 gallons of water roughly evaporated gave 14 pints of salt, the analysis of which gave $\frac{97.80}{100}$ of chloride of sodium. The fresh-water lakes and rivers, which are numerous, abound in trout. The maritime regions W. of the Sierra Nevada are described as fertile and genial in the highest degree.

The whole of this district, including the valleys of the Sacramento and San Joaquin, is described by Colonel Fremont in most glowing terms. Abundantly supplied with pasture and timber, it produces in perfection all the fruits and Cerealia of Italy; its climate, instead of varying from hot to cold, ranges between dry and wet, and vegetation, checked by the dryness of summer, is revived by the wet of the winter months. To these advantages is added the harbour of San Francisco, the finest and most perfect in the world, extending from its narrow entrance nearly 50 miles into the interior. The details given in the memoir, to which I must refer you, will be found full of interest and information.

Having completed the superintendence of the publication of his map, Colonel Fremont was about to proceed as a settler to California. Anxious to avail himself of this opportunity of crossing the Rocky Mountains to render additional services to geography, he had arranged a strong exploring party, and proposed in the middle of winter to cross the Rocky Mountains above the head waters of the Rio del Norte. The disastrous and fatal termination of this expedition is now well known. An early winter of unparalleled severity prevented his getting on; he was completely snowed up on the summit of the range. His mules were frozen to death, and it was with the greatest difficulty that he and about half his party escaped with their lives, but in a miserable condition, to Taos.

The work of Major Emory is entitled 'Notes of a Military Reconnoissance from Fort Leavenworth, in Missouri, to San Diego, in California, including parts of the Arkansas, Del Norte, and Gila Rivers.'

Major Emory accompanied the force commanded by Colonel Kearny, which was styled "the Army of the West," and, marching from Leavenworth, was destined to strike a blow at the northern provinces of Mexico, particularly New Mexico and California. The party were well provided with instruments, including sextants, chronometers, and barometers, by which, with the exception of some variation in the rate of the chronometers in crossing the mountainous country between Santa Fé on the Rio Grande del Norte and the Gila River, many careful observations were made. The astronomical observations were finally computed and corrected by Professor Hubbard; they establish the geographical position of 52 points extending from Fort Leavenworth to the Pacific.

The line of country thus traversed, and of which we have much interesting information respecting its physical geography, geology, botany, and antiquities, as well as of its inhabitants, may be briefly described as follows:—From Fort Leavenworth they proceeded to Bent's Fort on the Arkansas, and thence in a S.S.W. direction to Santa Fé. From Santa Fé they descended the course of the Rio Grande del Norte in an almost southerly direction for 180 miles; then, turning to the W., they crossed the elevated watershed between the rivers flowing into the Atlantic and the Pacific, and, descending into the valley of the Gila, followed the course of that river down its narrow and rocky bed for several hundred miles to its junction with the Rio Colorado. From thence, after crossing the Colorado near the head of the Gulf of California, they crossed a sandy desert of some extent, and finally reached San Diego after meeting with considerable opposition from the last remnant of the Mexican forces. The greater part of this route is new and interesting; the physical features and vegetation of the country are graphically described; and the work, with its various appendices, accompanied by an excellent map of the route, must be considered as a valuable addition to our knowledge of this portion of the American continent.

The American Congress has also published during the past year a very interesting memoir of a tour to Northern Mexico, connected with Colonel Doniphane's expedition in 1846 and 1847, by Dr. Wislizenus, full of geographical, geological, and particularly botanical information, with a map of a route from Independence on the Missouri to Santa Fé, Chihuahua, Monterey, and Matamoros.

In addition to the increase of our geographical knowledge of California and the northern provinces of Mexico by these expeditions, another event of a remarkable character will undoubtedly ere long

considerably extend our knowledge of these distant countries. It can be scarcely necessary for me to say that I allude to the recent discovery of gold-mines in California—mines of such extraordinary wealth as, taking only a moderate view of the accounts which have yet reached us, to throw completely into the shade all that we have yet heard of the wealth of the Brazils, or the still richer products of the gold-mines of Siberia, on the flanks of the Ural and the Altai, already so fully described to you by Sir R. Murchison in his Address in 1844, and by M. Hoffman in an account of his journeys to the gold regions of Siberia, noticed by me last year. Should the researches of future years in any degree correspond with the results of last year, when it is computed that, notwithstanding the irregularity of the proceedings and the insufficiency of means, gold to the value of four millions of dollars at the lowest computation was extracted from these mines, it is impossible to calculate on the amount of immigration likely to take place into this region in the course of the next few years. By these means the civilization of a new world will be accomplished. Extensive regions, now scarcely trodden by man's foot, known, however, to be productive to the greatest degree, and to contain treasures of scientific interest more valuable to the botanist, the geologist, and the naturalist than its untold stores of gold, will be thoroughly explored. Commerce, spreading from the western shores of the United States, will open a new route across the Pacific to the islands of the Chinese seas, and we may thus look forward to knowing more of the interior of that great empire and of the neighbouring islands than we appear to have any chance of obtaining by other means.

Panama.—But this discovery of the wealth and importance of California has given additional interest to another subject which has at various periods attracted the attention of European statesmen and engineers. The narrow isthmus of Panama is the great obstacle to the easy transition of European and American trade from the Atlantic into the waters of the Pacific. Many plans and suggestions have been offered for overcoming these difficulties, and various localities have been pointed out as affording the least amount of hinderances to such an undertaking. A clear and interesting synopsis of the different points indicated some time back by the illustrious Alexander von Humboldt, from which an artificial communication might be opened between the two oceans, will be found in Mr. Aaron Palmer's Memoir, addressed to the late President, Mr. Polk, already alluded to (No. 80, 1848, 30th Congress). Here the comparative advantages and disadvantages of the different routes are discussed, and the additional information respecting them, subsequently obtained, is brought to bear on their relative merits.

Since then, railroads and canals have been alternately proposed, and supported as best suited the interest of the promoters or the physical characters of the country through which it was proposed to carry them. This is not the place, nor should I have the time, to detail these different plans, but it is evident that this Californian discovery must greatly expedite their construction, as it will also find the means for defraying their expenses. I will only mention that the Mexican Government are now making a carriage-road from Minatetlan, on the river Coatzacoalcos, to the town of Tehuantepec on the Pacific, a distance of 120 miles.

Captain Granville Loch, whilst lately in command of the expedition on the Mosquito coast, has constructed an admirable plan of the course of the S. Juan di Nicaragua, from its mouth to the Lake of Nicaragua, and of the surrounding country, which it is to be hoped will soon be published.

West Indian Survey.—Captain Barnett has recently been engaged in the survey of Antigua, Barbuda, and the Antilles, and Lieutenant Lawrance, hitherto second in command, will resume the survey of the West Indies as its chief.

Yucatan.—We learn that Dr. Heller, an Austrian naturalist, has just returned to New York, after passing two years and a half in exploring the provinces of Yucatan, Tabasco, Chiapas, and Oajaca. He has made some interesting collections, has studied the Maya language, and traversed Yucatan from Charupoton to Cape Catoche, and has made many discoveries respecting the early traditions of the Indians of Chiapas; he is about to publish the result of his discoveries.

SOUTH AMERICA.

New Granada.—Colonel Joaquin Acosta, to whose map of the republic of New Granada I alluded last year, has lately published at Paris an historical account of the discovery and colonization of New Granada in the sixteenth century. It is accompanied by a map, on which are laid down, in different colours, the routes of the various discoverers from Columbus to Robledo. It is chiefly compiled from older authors, both printed and in manuscript; the matter is put together in one consecutive narrative, omitting all the fabulous tales and empty declamations which they contain; it will be found to be full of interesting and original matter, and the catalogue of authorities, with remarks on their character and value, at the conclusion, will be most useful to those engaged in similar pursuits.

Colonel Acosta has also lately reprinted at Paris the '*Seminario di Bogotá,*' with several unpublished memoirs. This periodical also con-

tains some interesting papers on the geography of the ancient viceroyalty of New Granada. Colonel Acosta has lately returned to his own country, and is about to undertake a survey of the snowy and almost unknown mountainous group of Santa Martha.

A very interesting map of the Laguna di Titicaca and the valleys of Yuray, Callao, and Desaguadero, in Peru and Bolivia, has been lately published by Mr. Pentland from the results of his own observations. Mr. Pentland has accompanied this map with some observations to the French Academy, in which the following heights are given:—

Sorata . .	6,488 metres = 21,286 English feet.
Illimani . .	6,456 . . = 21,181 . .
Chimborazo	6,530 . . = 21,424 . .

A subsequent communication states that the mountain of Aconcagua, formerly supposed to be a volcano, in the southern part of Chili, is, by the triangulation of Captain FitzRoy, 7071 metres, or 23,200 feet, above the sea, and consequently the highest point in the New World.

We have been informed that the American Government have ordered an astronomical mission to the South Sea, under Lieutenant Gilliss, United States Navy. Many of the expected results will undoubtedly prove available to geographical knowledge. The principal object of the expedition is to make such observations in Chili as, with a series of corresponding observations in Washington and in Europe, shall tend to correct or to confirm the solar parallax, as well as that of the inferior planets. It is expected that the operations will be continued from November 1849 to the summer of 1852, at the island of Chiloe, which is to be the chief station of the inquiry. The leisure intervals of time are to be filled up with every description of observation, astronomical, geographical, magnetic, meteorological, &c.; and Lieutenant Gilliss zealously invites questions from all quarters on the objects proposed.

Quito.—In the 'Comptes Rendus' (No. 10, March, 1849) is an interesting notice of a paper by M. Visse, respecting the position and arrangement of the erratic blocks of the Andes of Quito. The question of the origin of these blocks has always been one of great interest, not only to the geologist, but to the physical geographer. M. Visse disproves the idea of their having been thrown out from a crater during an eruption, and adopts the view of their being derived from the écoulement or breaking down of the escarpment of the overhanging mountain, by which the débris have been spread over the plains below. A MS. map of the Rio Esmeraldas, near which they were observed, accompanies the paper.

MISCELLANEOUS.

Hakluyt Society.—In addition to the works published by the Hakluyt Society mentioned last year, we owe to them the interesting account of the 'Discovery of the Empire of Guiana,' by Sir W. Raleigh. It is entitled 'The Discovery of the large, rich, and beautiful Empire of Guiana, with a relation of the great and golden City of Manoa (which the Spaniards call El Dorado), performed in the year 1595 by Sir W. Raleigh, Kt., reprinted from the edition of 1596, with some unpublished documents relative to that country.' It has been edited by Sir R. Schomburgk, and we may be permitted to express a hope that this Society will long continue its useful labours in making us better acquainted with the celebrated voyages of our early travellers. We are also indebted to them for having published an account of Sir Francis Drake and his voyages in 1595. It is printed from the original manuscript in the British Museum, by Thomas Maynarde, a personal friend of Sir F. Drake's. The volume also contains the Spanish account of Drake's attack on Puerto Rico, respecting which the editor, Mr. Cooley, says that it is amusing to observe the variance between the Spanish and English accounts of the same action, both written in good faith.

Lighthouses.—In the progress of geographical discovery, or of hydrographical knowledge, whatever tends to facilitate the work, or to ensure the safety of the inquirer is of the utmost value. Of the means to this important end few are more deserving of attention than the erection of lighthouses; the more dangerous the coast they give notice of, or the more stormy the seas in which they are erected, the greater is the credit and the skill of the architect who successfully overcomes his difficulties. I do not pretend however to enter into this question on this occasion; but there is one example of such complete success in overcoming obstacles of no ordinary character, and which at one time seemed absolutely insurmountable, and of which the interesting record has been lately published, that I should be doing injustice to conspicuous merit, as well as violence to my own feelings, were I not to remind you of it. I allude to that magnificent specimen of this description of building, the Skerryvore Lighthouse, lately erected by Mr. Alan Stephenson on the dangerous group of rocks off the island of Tyree, south of the Hebrides, and of which a full and detailed account has been published by Mr. Stephenson himself. To form any just idea of the difficulties and dangers experienced in this undertaking, the terrific storms to which the workmen were exposed, and the talent and gallantry by which all was overcome, the work itself must be perused.

With regard to the general question of lighthouses, I may state that much information respecting those on the coast of Scotland will be found in the Report to the Commissioners of the Northern Lighthouses, printed in the Appendix C. to the Second Report by the Commissioners appointed to inquire into Tidal Harbours, laid before Parliament Sess. 1847-8.

Meteorology.—The many interesting facts connected with this branch of geographical investigation have during the past year attracted more than usual attention at the hands of their observers. Not only have phænomena been more carefully attended to and registered, but the number of localities at which observations are made by private individuals is increased. This is of the utmost importance; for it is only after many series of observations made at various spots have been compared and contrasted with each other, that the almost mysterious and recondite laws by which these phænomena are regulated can be finally ascertained. I do not here propose to go into the details of this question, but must confine myself to a few observations on some of the principal points which have come under my notice. I would particularly allude to an ingenious application of one of the most remarkable discoveries of modern science, viz. the use of the electric telegraph, for the purpose of rapidly communicating reports of weather and of winds from different parts of England. Many of the railway companies are stated to have entered into the plan with spirit, and, if carried out, we may expect that meteorological conclusions of great value will be obtained, by enabling meteorologists to ascertain the laws of the progress of the great aerial currents, or even of those electric phænomena which so sensibly affect the conditions of our atmosphere. When we recollect that, according to Captain Carless's investigation of the great rotatory hurricane on the Malabar coast in 1847, notwithstanding the violent rapidity of the circular motion, the direct progress of the centre of the storm was not more than 12 to 15 miles per hour, we can at once see how the electric telegraph would outstrip the hurricane in its progress, and convey a salutary warning to the regions it was approaching. M. Quetelet has communicated to the Royal Academy of Sciences of Belgium some particulars relative to the arrangements in England, and he states that a series of analogous observations are already being made at Brussels, Ghent, Louvain, St. Frond, Liège, and Namur.

An interesting paper was read not long ago before the Royal Society by J. F. Miller, Esq., on the question of the fall of rain. It was called, 'Some Remarks on a Paper entitled "On the Depth of Rain which falls in the same localities at different altitudes in the hilly districts of Lancashire, Cheshire, &c., by S. C. Homersham."' One of

the most remarkable facts mentioned by Mr. Miller was this, that, if the receipts of the mountain-gauges be compared with the rain-fall in the valleys, it will be found that the quantity increases considerably up to 1900 feet, where it reaches a maximum, but that above this elevation the rain-fall rapidly decreases, until, at 2800 feet above the sea, the amount is very much less than in the surrounding valleys.

No where do these meteorological observations seem to be encouraged and kept up with more alacrity than in the Bombay Geographical Society. There the matter is taken up with a zeal that must produce the best results, and the numerous observatories established in different parts of the Presidency must ultimately secure to them a vast mass of valuable information, which is the more important on account of the peculiar configuration of the ground, where the precipitous Syhadree range opposes such a powerful barrier to the moisture-laden atmosphere driven up from the ocean. I have great pleasure in stating that much of this progress is owing to the exertions of Dr. Buist, secretary to the Bombay Geographical Society. I have also much satisfaction in announcing the progress which has at length been made by him in the preparation of the first series of tidal and meteorological observations undertaken at his suggestion at Aden. Dr. Buist deserves the greatest credit for his exertions, which have at length resulted in his overcoming the difficulties so long opposed to the success of this important object.

Aneroid Barometer.—Amongst the many discoveries of the last year there is perhaps none so likely to be of use to travellers in difficult and barbarous countries as that of the Aneroid barometer. All who have travelled in districts but imperfectly surveyed, or of great inequalities of surface, have been anxious to avail themselves of the assistance of barometers to ascertain the heights of different spots, and all have probably found that it was impossible long to protect their instruments against the many risks of breakage to which they were exposed. The discovery of this convenient and portable instrument at once obviates many of these dangers. Of course it can hardly be expected that the same accuracy can be obtained from such a complicated instrument, depending too on materials liable to be affected by a change of temperature, as from the common mountain barometer. It will, however, serve on most occasions to obtain useful approximate observations. And the advantages gained by its greater portability and convenience in rugged countries, or when everything must be transported on horseback, far outweigh for the general traveller the precarious chance of the greater accuracy of the mountain barometer, if it remains unbroken or the mercury does not escape.

CONCLUSION.

I have endeavoured in the preceding observations to lay before you a general view of the proceedings connected with our Society, and with the progress of the science of geography by which the past year has been distinguished. With few and slight exceptions, the result offers little of remarkable interest beyond the conviction of the steady progress of geographical knowledge in all the civilized regions of the Globe, as evidenced by the unusual number of maps, charts, atlases, and other geographical works being published in many countries, and particularly in England, France, Germany, and America. This has been mainly owing to the increased knowledge obtained almost from day to day of the exact configuration and relative bearings of different countries, coasts, and islands, by the many surveys now in operation. Each correction of the position of a town, or of the delineation of a coast, renders all previously existing maps and charts not only *pro tanto* valueless, but, except for the history of the science, positively mischievous. Hence, as our knowledge increases, the desire to possess the last new map spreads through society, and calls for the publication of new atlases and charts. The science of meteorology has also made rapid progress, and under the auspices of such men as Colonel Sykes, Colonel Sabine, and Professor Dove, we may not unreasonably look forward to a time when the laws by which atmospherical phenomena are regulated will be ascertained, and rendered as available to the pursuit of natural science as those of attraction or of gravity. That our own Society may not be behind hand in this universal progress, must be the sincere desire of us all; but to do this, we must be active and industrious, our numbers must be increased, our Journal should be enlarged, and its importance made to be felt wherever science is understood or geographical knowledge is appreciated.

And here I may perhaps be admitted, before I take my leave of the Chair, to throw out a few suggestions respecting the future prospects and management of our Society. Notwithstanding the strong desire felt by all who take any interest in the advance of geographical science, there exists much diversity of opinion as to the best means of obtaining the desired end. With all the object is the same, viz., the spread of geographical information in its most extended sense; this embraces not only an exact knowledge of the limits of countries, and of the physical features of different districts, but a careful search into the productions of different regions, whether in the animal, or vegetable, or mineral kingdom: a knowledge of those

natural phænomena connected with magnetism and electricity, so variously developed in different portions of the earth's surface; a careful investigation of the laws of meteorology, including those of winds and currents, and, in short, of everything connected with the physical development of nature on the surface of our globe. It also embraces the application of geographical science to the representation of statistical and political information, as well as to the elucidation of ethnology and philology.

There is, as I have said, a difference of opinion as to the means by which these objects are to be attained. While some would limit the province of geography to the strict rules of scientific investigation, others, on the contrary, are desirous of popularizing the subject by making it more directly subservient to the gratification of the curiosity of the many, or to the wants of commercial speculation. Both these extreme views would, in my opinion, be equally injurious. They whom I am now addressing will probably agree with me, that it is only by a proper combination of the two principles that geography can flourish; that it is only by a complete union of scientific truth with popular interest that we can hope to see the science of geography take that hold of the public mind in this country which shall ensure it the support necessary to secure its efficiency, and to maintain it in a powerful and healthy condition.

But I have already trespassed too long on your time and patience, and yet I cannot leave this Chair for the purpose of resigning it to the gallant officer whom you have this day elected as your President, without congratulating you on having secured the active assistance of one who, since the first day on which this Society was called into existence, has ever been one of its warmest and most zealous friends. Captain Smyth brings to your service great scientific attainments and habits of business. What he undertakes he does not do by halves; and I have no hesitation in foretelling a prosperous future to the Society under his auspices. At all events, I quit the Chair with the most sincere wishes for its future welfare and success, and an ardent hope that the application lately made to Her Majesty's Government may meet with a favourable reception. It only remains for me to return you my sincere thanks for the uniform kindness and consideration which, in the conscientious discharge of my office, I have met with at your hands, whether in the Council or at our evening meetings, and for that support which I have received in all suggestions and measures which it has been my duty or my lot to propose for the welfare and interest of this Society.

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BEFORE THE

ROYAL GEOGRAPHICAL SOCIETY.

I.—*A Visit to the River Zambezi.* By T. S. LEIGH, Esq.

[Read February 28, 1848.]

ANIMATED by a love of adventure and a desire to explore regions little known, I availed myself a few years since of an opportunity of proceeding to the eastern coast of Africa, so seldom visited by Europeans, and had already been for some time engaged in examining several of its most interesting points, when circumstances led to my finding myself, in the middle of the month of July, 1839, at the principal of the numerous mouths of the river Zambezi. We had made the land in its vicinity three days before; but owing to the excessive cloudiness of the weather, which prevented any observation being taken, and the total absence of landmarks to indicate its position, our worthy skipper had failed discovering it. The whole line of coast for a degree or two to the northward and southward is moreover invisible at a greater distance than a few miles. In approaching land of this description, particularly within the tropics, the view to the beholder is most singular: the clumps of tall palm-trees, rising at first like so many islands with their bases enveloped in mist from the bosom of the ocean, and apparently unconnected with any support; but as the distance decreases, the dim misty outline gradually disappearing, their nature becomes more fully defined, and they are then seen to rest on a stronger foundation than that before afforded to the deceived eye.

With great care in sounding, we passed safely over the dangerous bar, on which at low water nothing is seen but huge breakers. The shoals forming it shift a good deal—so much so, indeed, that the soundings laid down in Captain Owen's chart some twenty years ago are not to be depended upon. We anchored just inside Tangalane Point, where a fire is always kept burning at night, close to the flag-staff, as a signal to vessels in the offing. This had, however, escaped our observation, the strong northerly current having set us past it before dark.

Hippopotamus Point, on the southern shore, seems not unaptly so named, the first creature we descried on the beach being a huge animal of that species, which, scared at the near approach of so much larger an object than itself, scuttled down to the water with all possible speed, and shortly afterwards raised its head above the surface at some distance, opening its enormous jaws, and uttering the indescribable harsh bellowing cry peculiar to this river monster.

On the following day a black pilot—who, however, called himself a Portuguese—came to take the vessel up to the town of Quilimane, about ten miles distant; and truly interesting was this sail from the great variety of animal life to be seen on the banks. The river varies in width from one to three miles; but as our course lay chiefly along the northern shore in order to avoid the numerous shoals, our proximity enabled us to see distinctly everything passing. Numbers of hippopotami were rolling their unwieldy carcasses in the deep bed of mud left outside the fringe of gloomy mangroves which mostly line the banks, but they retreated to their oozy abodes at our approach. Where a break occurred in the mangroves, and trees of greater height appeared, intermixed with tangled brushwood, many varieties of the monkey-tribe were to be seen springing from branch to branch, or swinging by their tails from the huge creepers, forming more or less graceful festoons.

On some of the extensive sandbanks large flocks of flamingoes stalked along in Indian file, requiring a close inspection to satisfy us that they were not really, as they appeared at a distance, scarlet coated warriors—pelicans, solitary or in pairs, were sailing undisturbed in the shallows—and on the verge of the water numerous kinds of cranes, curlews, gulls, and other aquatic birds, were busily engaged in fishing or extracting worms and insects from the mud. Of alligators we saw none; they are found generally higher up the river, beyond the tide.

We touched gently on the mud several times, for it is only at spring-tides that large vessels can cross the smaller bar (a shoal about half-way up), and approaching an apology for a battery, armed with two guns of small calibre, we were hailed in most unintelligible jargon. This being responded to on our part in a similar style, perfectly satisfactory, however, to the garrison, we proceeded to drop our anchor opposite to the spot on which the straggling town above-mentioned is situated, in the midst of no less than thirteen slave-brigs, brigantines, and schooners—all Brazilians, with one exception (a Spaniard), and all under Portuguese colours.

Although called a town, Quilimane bears but small resemblance to such: there are no streets laid out at right angles, no

squares, and no public buildings, with the exception of a small church under the patronage of Nossa Senhora do Livramento; and a number of sheds included in one long quadrangle, and dignified by the titles of custom-house, barracks, prison, &c.

Notwithstanding the numerous vessels by which this place is visited there is no mole or wharf of any description whereon to land; and as the receding tide leaves bare a deep bed of mud, disembarkation is sometimes rather hazardous. I was, however, fortunately provided with an excellent substitute for a landing-plank in the shape of a gigantic attendant, who bore me to the shore on his broad shoulders in safety.

We were received with great politeness by the Governor, Lieutenant-Colonel Don Thomas José Peres, a man of very gentlemanly bearing, who entertained us with a long account of a war in which he had lately been engaged with a powerful negro tribe from the southward. These savages—whom I presume to be the same mentioned in Captains Owen and Boteler's works as the Oratontahs or Vatwahs, and of whom they have given such interesting accounts—advanced to within a week's journey of Quilimane, after committing great devastations, but were at length driven back by the militia, composed partly of free blacks, partly of the slaves belonging to the different estates, headed by their owners. Previously to their first attack, which was made on the distant settlement of Manica, the Vatwahs, according to their invariable custom, sent an arrow to the Governor as an intimation of their intention to commence hostilities, but before measures could be taken to put a stop to their progress, that town had been taken by assault and every living creature massacred.

Various accounts were given me of the population of Quilimane; but the Governor's estimate was, I should think, the most correct: he considered it to be about 15,000; this, however, included the country for some miles around. Of these 10 only were genuine Portuguese, 20 were Creoles, 12 Canareens or merchants from Goa, free blacks from 2000 to 3000, and the remainder domestic and agricultural slaves. There were besides a few Banyans or Indian merchants and Parsees; but owing to some alleged injury they were said to occasion to commerce by their mode of traffic (their superior industry and talents for business enabling them to outdo their competitors), a peremptory order had been issued for their departure from all the Portuguese possessions in Africa, and the vessels employed in trading between these and India were being loaded with their goods to convey them to the latter country. Of course they complained bitterly of the decree as most arbitrary. At Senna and Tété the number of Portuguese is more consi-

derable. They are chiefly persons transported from the mother-country for political or other offences, or men of low origin landed from some of the slaving craft, and who have amassed wealth by various means, often not the most honest; consequently the society is not particularly select. The Canareens decidedly form the most respectable portion of the community. None of the settlers, however, appear by any means to be deficient in hospitality; and the reception I met with from one of the richest of the Portuguese inhabitants was most friendly. He allotted me an excellent apartment in his spacious dwelling, and every possible means were adopted to render my stay agreeable.

My entertainer's (Don Pedro's) establishment presented a good specimen of the style in which the settlers live, his board being amply provided with flesh and fowl, wild and tame, and with all procurable luxuries both at breakfast and dinner, the only two repasts of which they partake; the sole refreshment after the latter meal, which is over early (generally about four o'clock), being green tea, in small cups and without milk, brought shortly after the host leaves the dinner-table, either into the broad piazzas in the interior of the dwelling, or into the portico without. In the former case, whilst indolently reclining on a sofa and smoking a "cigarrito," he has a view of his slave-yard, round three sides of which are sheds for the accommodation of men, women, and children, of all ages, whilst in the middle is to be seen an ominous-looking post, at the foot of which all infractors of the domestic regulations meet with summary chastisement.

Each establishment has a number of domestic slaves attached to it, proportionate to the circumstances of the owner, and dressed, after their fashion, in his livery; that is, with a piece of cloth fastened round the loins and descending to the knees, each house having its own pattern. Many of them are to be seen lounging about at all hours of the day, with their arms crossed, or lying in groups near their masters' doors, apparently without an earthly care, their sole occupation being to convey some of the family from one house to the other, part of the number carrying the machila or hammock, and the remainder running behind.

The free blacks in the vicinity of the town, who belong principally to the Macúá tribe, are a merry set of beings. Although burthened in different ways by the government, being obliged to contribute their labour to the crown-lands, and pay heavy tribute in kind to the chief of their district, they appear utterly devoid of care, working away cheerfully in their paddy, maize, or natchini-fields during the day, and

at night are to be seen in every direction, dancing to the sound of the tom-tom, in which amusement the slaves likewise join.

The same spirit of cheerfulness before described extends even to the slaves already embarked for exportation; so many of them are allowed on the deck of each vessel as it will hold, and there they strike their tom-toms and sing in chorus, clapping their hands as an accompaniment, apparently with as much animation as if they were still in their native villages. Of course it is a great object with the masters of the slavers to keep up this spirit of contentment as much as possible, and as the unfortunate beings, about to be severed from their kindred soil, are in a state of the most complete ignorance as to what is in store for them on arrival at their place of destination, this cheerfulness is in reality not so extraordinary. Some of those, however, belonging to tribes living at a great distance inland, are said to believe that they are to be eaten.

Most of the slaves exported are brought down from the interior in long lines of both sexes and all ages (mostly, however, from 12 to 25), chained to each other by the neck, and are sold at the port for a sum varying from 10 to 40 Spanish dollars each. They are procured in exchange for dungaree, muskets, powder, gaudy cotton handkerchiefs, and prints, beads, and a few other articles imported by the slavers, who, however, in order to make up their cargoes quickly, likewise bring large quantities of Spanish dollars, doubloons, and moidores. Each master or supercargo of one of these vessels on arrival hires a store with a number of attendant blacks, and gradually disposes of his stock of goods, generally paying the settlers half in merchandise and half in cash for the slaves he purchases. Besides the traffic in slaves, carried on with the interior by means of black dealers principally, the Portuguese have another and more nefarious mode of obtaining them; they arm their domestics in considerable numbers, and make incursions into the territories of the distant tribes, and capture all they can without distinction, no native army being able to resist the fire-arms of the Europeans.

Although the Governors of the Portuguese colonies in Africa have at different times of late years received instructions from their government to issue peremptory orders, prohibiting the exportation of slaves, and several have professed endeavouring to carry these orders into execution, they have either given it up as a hopeless task, or found it to their advantage to connive at the practice: indeed, fear of the consequences, if nothing else, would deter those most alive to a sense

of duty from discouraging the slave-trade, having before their eyes the example of several of their predecessors, who being most persevering in their endeavours to effect other improvements, fell victims to assassination. The settlers have therefore hitherto managed to elude all attempts, either internal or external, to put a stop to the traffic, and it appears to be still carried on from the eastern coast with great vigour, notwithstanding the abolition of a privilege, under the cloak of which vessels bearing the Portuguese flag laughed at our cruizers, that, namely, of conveying slaves from one of their possessions in Africa to another.

Much has been remarked on the unhealthiness of the western, and the comparative salubrity of the eastern coast, of Africa: but if I may be allowed to express an opinion, I should say, that in this respect they are very much on a par. The mortality at Quilimane at certain periods is frightful; when vessels happen to remain during the rainy season, which commences in October and lasts, with short intervals, till February, their crews suffer dreadfully: even in the dry season many are carried off, and it is not to be wondered at, for the whole country for at least twenty leagues in every direction is one vast alluvial flat covered mostly with forest, and either marshy or intersected by numerous small rivers flowing slowly into the great stream, and these not limpid rivulets, but sluggish drains, half full of mud, the banks of which are thickly lined with the deadly mangrove. Neither horses nor cattle thrive; when imported they live but for a short time, unless sent up to the higher grounds of Senna or Tété.

Throughout the whole of the country subject to the Portuguese, the sportsman may gratify his passion to its utmost extent. Wild beasts abound even in the neighbourhood of Quilimane, and the elephant at times makes his appearance close to the town. The hippopotamus affords likewise ample field for sport; and although, apparently, an unwieldy animal, when provoked becomes active enough, and woe to the unlucky wight who then happens to come in contact with his enormous strength.

The negroes up the stream kill this animal in the following manner: watching the place where one has sunk, and is likely to rise again, they paddle gently up to it as he makes his appearance, and drive a harpoon into his fat carcass above the spine; to this a bladder is attached by a long line, and as the blow is generally given with great precision, the effect is instantaneous: the animal sinks and is gradually carried down by the current, the bladder always indicating the spot where he is; four and twenty hours after death the body floats, when

it is drawn to the shore and the flesh greedily devoured by the natives.

The banks of the Zambezi * near Senna are extensively inundated in the rainy season, and then crowds of wild animals of every description are driven to take refuge on the higher grounds, which stand out like so many islands in the midst of an inland sea; here the natives assail them, and commit great havoc amongst the defenceless herds: even the ferocious beasts of the forest submit then to be slaughtered unresistingly by the spears and arrows of their foes.

It is by no means an unfrequent occurrence for a tiger, or rather panther, to pay a visit to the town in the night.

II.—*Mayotta and the Comoro Islands*. By T. S. LEIGH, Esq.

[Read June 21, 1845.]

WHILST passing through the Mosambique Channel a few years since an opportunity occurred of visiting this cluster of islands, situated near the northern entrance of that channel, between Cape Ambre, the extremity of Madagascar, on one side, and Cape Delgado, the E coast of Africa, on the other. It is almost superfluous to state that this group consists of four islands: Comoro, which gives its name to the group, but is called by the natives Angazija; Johanna or Nzuana, already sufficiently described by various travellers; Mohilla; and last, but not least, Mayotta, one but little, if at all, frequented by navigators, but to which public attention has been lately in some measure directed by the proposed colonization of it by the French.

The dangerous reefs, that stretch a distance of several miles from the shores of Mayotta, as well as the supposed difficulty of procuring provisions, have doubtless contributed at all times to deter vessels from touching there, the more so as they have the certainty of obtaining a good supply and a hospitable reception at Johanna, where, moreover, there is a safe roadstead. Undeterred, however, by the risks to be encountered, we stretched across from the latter island, having on board Shea Abdallah, an uncle, and at one time prime minister, of its most potent monarch. According to this man's account, the royal family of Johanna is descended from one of three Persian princes, who some centuries since were driven from their country either during one of the revolutions then so common,

* Vide Journal of the Royal Geographical Society, vol. ii. p. 136, vol. iii. p. 199. vol. v. p. 340, vol. xv. p. 185, vol. xvi. p. 139.—Ed.

or by the tyranny of the sovereign on the throne, and with some followers fled to the Comoro Islands, where they were well received by the barbarous inhabitants, and ere long established as kings in the three larger ones, introducing a higher degree of civilization than that to which the natives had attained. In course of time the descendants of the two younger princes, who had settled at Comoro and Mayotta, became extinct, and the elder line alone remained. This history the Shea related with great self-complacency.

As a sequel to the above I may mention that Dansúlú, King of Mayotta at the time of my visit, was chief of the Sacalavas (literally long people) on the N.W. coast of Madagascar, when Radama, King of the Ovahs, had it in contemplation to subject the whole of that island to his dominion. Having been frequently defeated by Ramaneetoka, Radama's brother, and finding that there was no repose for him in Madagascar, Dansúlú at length fled in despair to Johanna, where he was kindly received by Sultan Abdallah, and as a compensation for the loss of his territories in Madagascar, made Viceroy or King of Mayotta, then in subjection to that monarch. To this the fact of his being a Mahometan no doubt in a great measure contributed.

Calms and light winds are prevalent about these islands, particularly in September, when we visited them, so that, although the high land of Mayotta was visible shortly after we started from its sister island, it was not till the morning of the third day that we anchored outside a reef on its north-eastern side, close to a small detached island called Nisamboro, on which many wild goats were seen browsing. Being anxious to commence my exploration of the island, I was accommodated with a boat by the master, and, accompanied by Shea, left the vessel to wait for a fair wind with which to pass through an opening in the reef some four or five miles distant. My four blacks pulled lustily in for a small boat-channel, which Shea told me was to be found near the main island, but being unsuccessful in our search, and finding that the breakers were not heavy, the blacks jumped out and dragged the boat over the reef at its narrowest part. Once across, we were floating in water so smooth and clear that everything was visible at the bottom, where arose corals and other aquatic productions of so many variegated hues that they formed a complete sub-marine flower-garden.

Rowing and sailing, as occasion required, some twenty miles along the eastern coast, and in the broad channel between this and the reef which ran parallel with it at a distance of some three to four miles, we passed a number of small bays

and beautiful valleys, formed by divergent branches of the mountains in the centre, some of which appeared parched and barren, whilst others seemed clothed with verdure to the summit—and after having struck several times on isolated coral rocks, which rose from the bottom like so many large cabbages, by four o'clock we reached a small island, separated from the main by a narrow deep-water channel, and on which N'zaoudzi, the only town of Mayotta, is built.

As we approached, I was informed by Shea that this island is about a mile and a half in circumference, and rises perpendicularly from the water on every side but one, where there is a shelving beach, defended by a thick wall and small square towers, erected at equal distances and of different heights, according to the facility of access. The gates are locked every evening at dusk, and the keys left with the governor, without whose permission no one can quit or enter the town. These precautions were said to be adopted owing to Ramaneetoka's expected invasion.

We were received on the beach, outside the walls, by a number of the inhabitants, a mixture of Sacalavas, Autalouts, Johannamen, &c. who all greeted us very cordially with hearty shakes of the hand. Shea Abdallah was of course well acquainted with many of his countrymen, and by them we were conducted through the gate into a hut belonging to the Cadi, which was soon thronged, and various were the questions asked as to the cause of our visit, where we came from, &c. Having replied to these in a satisfactory manner to all parties, I asked when Dansúlú would be visible. The answer was, "Not till the evening;" so we sat down at once to some boiled rice and curried fowl, hospitably provided by our entertainer the cadi, and afterwards proceeded on a voyage of discovery through the town. This I found to be composed, as usual in these islands as well as in Madagascar, of huts of different sizes, constructed of the leaf-stocks of some of the palm tribe, and roofed with the leaves themselves, presenting generally a very neat appearance, and quite suitable to the climate. The streets were so narrow that the houses on either side could be almost touched at once by stretching out the arms. The Mahometan part of the population was generally dressed in dirty close-fitting robes or gowns of the colour of nankeen, and wore turbans—some white, others of the true Arab pattern. The blacks and Sacalavas had merely a cloth round the loins. The great majority were sitting at their doors listlessly smoking; but to these the Banyans or Indian merchants formed a striking exception. These men appear to find their way in the East wherever money is to be made, and may in some respects

be compared to the Jews. In Mayotta, or rather its capital, their usual plodding money-making habits were visible—for they appeared to be the only shopkeepers, and sat in their dark dens behind their display of drugs, condiments, &c., patiently awaiting their customers. After traversing a few lanes we suddenly stumbled on the high court of justice for the trial of all offences, great and small, held in the open air outside the Governor's house. The latter and the Cadi were seated with their backs against the wall, whilst plaintiffs, defendants, and witnesses, formed a semicircle at a respectful distance—all squatting on their heels in an apparently very uncomfortable position.

A message being now brought that Dansúlú was ready to receive us, we proceeded forthwith to his residence, of which he has two, the only stone buildings in the island. From the rough couch on which he sat cross-legged, the Governor motioned me to advance, and received me, like the rest of the islanders, with a cordial shake of the hand. From him I had again to undergo a long series of questions; in addition to which he was very curious to be informed of some of the English manners and customs, and in his observations on these he betrayed a good deal of intelligence.

After being assured by Dansúlú of his friendship for the English, and his wish to see me as often as I could spare time to pay him a visit, we took our leave, and proceeded to the house of the self-styled Prince Hussein, Shea's nephew, who had invited me to take up my abode with him. There was only one room to which visitors were admitted; but this was much more commodiously furnished than Dansúlú's, being surrounded with couches, provided with soft pillows—indeed everything wore an aspect of more comfort than usual. The remainder of the hut was occupied by the females of his family, invisible to strangers; and though quite a boy, I understood that he already had the full complement of four wives allowed by the Mahometan religion.

The next morning we started on an excursion to a small island connected at low water with N'zaoudzi, and called by the natives Pamanzi, the chief feature in which is a remarkable basin, evidently an extinct crater. On the isthmus were drawn up several dows or Arab craft, several of them with their timbers fastened together with coir-rope, and all with the elongated bow characteristic of this description of vessel.

On reaching the island itself we crossed a mangrove swamp overflowed at high water, passed a small ruined mosque and a plantation of bananas, and climbed a hill some 300 to 400 feet in height, on reaching the crest of which we found our-

selves standing on the edge of a large basin little less than a mile in diameter. At the bottom, and occupying about half its extent, was a lake of water of a dark green colour, apparently on the same level as the sea, which was confirmed by my guide saying that it rose and fell with the tide. We descended the precipitous pathway, and, passing through some long grass and reeds, reached the margin of the pool. The water we found to be intensely salt; but not many feet from the brink are two or three small wells from which is procured good and fresh water. The guide informed us that the water of the lake itself possesses such peculiarly bleaching properties that no soap is requisite for washing linen with it. There is but one kind of fish in the lake, small and of a reddish colour. On its shores were a number of palm-trees; but nearly the whole of them appeared to have been struck by lightning, or to have decayed through some cause or other, for the trunks alone were standing. There were also a few stunted shrubs. Reascending the side of the crater by the same path, we prosecuted our researches by skirting it till we reached the opposite side, when we perceived that a few nooks or ravines gave shelter to a number of "sampo trees," and some few others. The sampotree is of the palm tribe, and produces a pulpy fruit, from which oil can be extracted, which is mostly exported to Mozambique as food for the slaves. The sea dashed with great fury against the base of the cliffs on this side, and nothing but breakers could be seen to the N. and S. Hearing from our guide that a substance something similar to salt was to be found amongst the cliffs, which he called "majadi," we proceeded in search of it, and found some adhering in small scales to the outside of the cliffs. It was very white, and of a bitter flavour (nitrate of soda?). The cliffs were extremely steep; and in some of the ravines a number of the bats, vulgarly called flying-foxes, were hanging from the branches of the trees, uttering shrill cries. They were in no way alarmed by our appearance, but continued their squabblings till a musket-shot discharged over the trees drove them off in a dense cloud.

Having now made arrangements for visiting the peak, which forms the most interesting feature in the scenery of the main island of Mayotta, and which reared its lofty head at a distance of some 20 to 25 miles from the town, I started early on the following morning with Prince Hussein, who had been exceedingly attentive during my stay, and who volunteered to accompany me; Eusimo, one of the few remaining aborigines of the island; my servant Adda; a gigantic Johannaman; and an Autalout, Salem Dactore by name, whom I hired as a guide—paddling over the channel in a lacca or canoe, with an outrigger, and

capable of holding half a dozen people, we landed at the foot of a hill crowned by a stockade, constructed formerly by Dansúlú for his defence against Ramaneetoka, and which enclosed a somewhat considerable Sacalava village.

From hence the path led at first chiefly along the shore of a bay, sometimes through a mangrove-swamp, at others through long grass and numberless plants, creepers, &c. exhibiting all the luxuriant vegetation peculiar to tropical climates. Now and then we passed under the delightful shade of banana and plantain-trees, from which the fruit was hanging in clusters, tempting both to our sight and taste. At one spot on the beach a dow was building; the wood employed in its construction was of very hard texture, and I was informed that abundance of the same description could be found over the island. Close to it a blacksmith's shed had been erected for the purpose of forging the iron-work to be employed on the craft, and the workmen appeared to handle their tools with great dexterity. The bellows, similar to those used in Madagascar, were two goat-skins, one end of each of which was opened and closed alternately by the hand of the blacksmith. Charcoal was the fuel used, mineral coal being quite unknown.

Leaving the shore we now struck more inland, and passed over a succession of low hills and beautifully undulating country, with small streams winding along the bottoms, and of the most fertile description, here and there patches of ground planted with tobacco, along the margins of the streams clusters of papaw and guava-trees, and the sides of the hills covered with woods. These, however, were not of many years' growth, and owed their existence to the greater portion of the aboriginal population having been carried off as slaves previous to the abolition of the slave-trade in Madagascar. To this, as is well known, Radama was induced by British interference; indeed up to the time of his death a certain annual sum was paid him in lieu of the profits he derived from the traffic. In these villages were mostly old men and women, very few boys or girls, or even children of tender age. On ascending hills of higher elevation the soil became more parched, and in many places destitute of vegetation; yet the valley still presented the same features; the streams being numerous, though small, and full of beautifully clear water—whilst their banks were thickly wooded in many places, and the banana, plantain, cocoa-nuts, papaw, and other fruit-trees flourished without an owner to claim their produce. As we approached the centre of the island there were indeed but few signs of inhabitants, still a patch of tobacco or sweet potatoes was sometimes met with, and the grass was on fire here and there, showing at

all events that man was in the neighbourhood. On many spots there were groups of huts, evidently long deserted, giving an air of desolation to the scene, but clearly proving that the island must formerly have been thickly peopled. Some very beautiful natural arbours appeared amongst the trees, formed by the numerous creepers, which hung in graceful festoons, covered with berries and flowers of varied hues. The trees themselves were of every graceful variety of shape, some tapering like the pine, others spreading their branches like the oak. No animals whatever, either wild or tame, were to be seen, but at long intervals we saw the traces of cattle, said by our guide to be wild, and probably either once tame or the descendants of those in the possession of the inhabitants, which escaped into the woods when their owners were driven off. Guinea-fowl we now and then caught a glimpse of. Wild pigeons also, mostly with white heads, necks, and breasts, and bodies of a slaty colour, were common, and I shot several which were attracted near us by Salem's imitating their peculiar note. Pigeons of darker colours were likewise seen, as well as several varieties of doves, and numbers of large brown hawks and crows. Amongst the smaller birds were the common sparrow, a few fly-catchers, *hâve de vêts*, and humming-birds. One cluster of trees was completely covered with the large species of bat before-mentioned, and which at a distance gave them the appearance of being covered with fruit, these animals being of a reddish colour. I was told that there are but few snakes on the island, and these small and harmless.

At 4 o'clock we reached the gorge between the double crest of a mountain covered with forest: from it the sea to the west of the island was visible. For some time after this our route lay downwards through some very thick forest, principally of palm-trees, and as it grew dusk the numerous trunks of those which had fallen across the path rendered our walk rather hazardous. After making our way slowly for some three hours without seeing any habitations, I was gladdened by the intelligence that we were approaching a hamlet; this we found as usual situated on a slight elevation, round which the forest had been cleared away, and consisted of half a dozen huts, inhabited by elderly men and women. Every village, however small, has its chief, to whom, as on the continent of Africa, the stranger applies for a night's lodging. In this instance he appeared in the form of a venerable old man, with a long white beard, and bent double with age. After scanning us with curious eyes and hearing our request for hospitality, he ordered out some hides which were spread in the open air with a straw-mat over them, on which we were requested to

repose after our toilsome journey of some 20 to 25 miles, whilst a hut was being prepared for our reception. Some fowls were killed, and whilst these were being boiled with rice by Adda for our supper, we endeavoured in vain to enter into conversation with our host.

Having rewarded our host with a clasp-knife and a razor, with which he appeared much pleased, we started at 9 A.M. for the peak, which towered to a considerable height at a distance of some six miles from us. Proceeding at first over the low grounds, which were still thickly wooded, we passed several dry channels of what are torrents in the rainy seasons. The variety of trees was rather numerous, several of them bearing fruit.

From our halting-place to the peak, and as far as we could see, all was solitude, and it was in deep silence that we gradually approached the summit.

The hills in its immediate vicinity were of loose friable earth, white, red, and grey—partly clothed with wood—partly parched and destitute of vegetation. Winding round the base of the peak, where the path led through a thick wood, we commenced its ascent on the southern side, where it appeared most easy of access, and in fact at this spot we met with no great trouble; but when we had mounted about one-third of the distance, the path terminated, and the difficulty was greatly increased. Here poor Prince Hussein fairly gave in, and declared that he could proceed no higher; but his attendant, Eusimo, a smart active young fellow, who had already made the ascent, offered to lead the way; so, having divested myself of every incumbrance, with the exception of my walking-staff, we clambered on, leaving the Prince in charge of the baggage.

The feat we were now undertaking was one of no small difficulty, as the peak rose almost as perpendicular as a wall before us, and, had it not been for the trees which on one side grow nearly to the summit, the ascent would have been impracticable. Here and there huge stones jutted out, requiring great efforts to clamber over; the soil, where it appeared, was hard and smooth, and, consequently, slippery; now and then a treacherous kind of grass, the leaves of which were as sharp as razor-blades, inflicted cuts on our hands; and lastly, from time to time our progress was impeded by a creeper armed with huge thorns entangling itself in our clothes. Climbing as we best could, with all our energies employed in overcoming the obstacles opposed to us, and without the slightest idea that there was any wild animal near us, we were suddenly startled by a singular grunting amongst the trees in every direction, and looking around we found ourselves sur-

rounded by numbers of those graceful animals, the lemur, some of which were swinging by their tails, and looking down upon us with the utmost curiosity. Clambering on with renewed energy we at length found ourselves without the belt of trees that had rendered such opportune assistance; beyond them, however, the irregularities in the soil formed steps to aid us, and by 3 o'clock p.m. we reached the summit, having occupied six hours in the ascent. The elevation we had now attained, which I estimated to be about 2000 feet, afforded of course a most comprehensive view of the greater portion of the island. Immediately below were hills of different degrees of elevation, and of a variety of hues; beyond them for some distance was a confused mass of forest, and then again mountains almost equalling in height the peak on which I stood. On the west side of the island was a deep bay, studded with islets interspersed with breakers, rendering that side completely unapproachable. Not a hut was visible from that eminence, and all appeared to be one vast solitude. The summit of the peak, which might be some 20 yards square, was clothed with ferns of great beauty, and plants unknown to me, but well worthy the attention of the botanist. The mosses also were exceedingly beautiful and of the most delicate texture. A stone three feet in height was stuck upright in the centre of the platform, and the natives with me regarded it with superstitious veneration. Close to it was a young coconut tree, planted about two years before, which, if it ever reach its full growth on that exposed spot, will be a very prominent object, and present to the beholder from below the appearance of a small plume on a sugar-loaf hat. Overhanging the tremendous abyss on the northern side, perpendicular from the summit to the base, was a tabular mass of rock, resembling freestone, of which indeed the whole hill appeared to consist. Being the first European who had ever stood, according to the account of the natives, on that proud eminence, I, Englishman-like, engraved my name with the date of the year deeply in it with hammer and chisel. Having accomplished this, we now commenced our descent, which was, if possible, more difficult than the ascent; and rejoining Prince Hussein, proceeded in an easterly direction towards our resting-place for the night.

The next day, leaving the shore, we passed several hamlets, all, like the rest, very thinly inhabited, and crossing a number of beautifully clear streams, travelled slowly over some 15 miles of tolerably level ground until we reached a rather considerable village, situated at the base of a precipice, which hung frowningly overhead. This was under the control of Dinaro, one

of the most powerful chiefs of the Betsimarakas, who have fled from Madagascar to avoid the persecutions of the Ovahs. Into his hut, which differed from the rest only in size, we entered, and met with a very cordial reception. The chief was a tall handsome man of copper colour, having merely a cloth round his loins; whilst his wife, a portly damsel some shades lighter, wearing a clean white lamba or cloth thrown gracefully over her shoulders and descending to her feet, leaving her right arm exposed, was seated on a plain bamboo couch. The hair of both, as well as of all their attendants, was the most singular feature in their appearance, being long and black, but plaited into numberless little tails, which made them look singularly wild. The men had no whiskers, but simply a small tuft on the chin as an apology for a beard. Near the entrance were a number of his concubines and children, cooking rice, which forms their principal diet. A number of "laccas" or canoes were drawn up on the beach just opposite the village, whilst in others some of the men of the tribe were busily engaged in spearing fish, which they did with great dexterity; at the same time many of the softer sex, mostly slaves, although of the same race, were engaged in pounding the paddy, by which operation the husk was disengaged from the beautifully white grain it covered. The women were mostly short and stout, but with pleasing features, and smiled graciously at our party.

After joining Dinaro and his wife in a family dinner of rice and sweet-potatoes, with fish, broiled on the embers of a wood-fire, I hired two laccas to return to the town, which was dimly seen at a distance, and impelled swiftly by paddles wielded by two brawny Betsimarakas, one at the stem and the other at the stern, we arrived at our destination in two hours. Dansúlú sent for me as soon as he heard of our arrival, and was very anxious to know what space there was at the summit of the peak, as he said he wished much to build such a stronghold there as would effectually defend him against Ramaneetoka's attacks.

After resting for a couple of days I undertook another excursion in a north westerly direction, passing over very much the same description of ground, and meeting with as few inhabitants as before; then taking a very cordial leave of Dansúlú we went away, intending to try a channel through the reef to the southward, which is made use of by dows but as we were at dinner a grating noise was suddenly heard, and there we were stuck hard and fast on a reef, which was not visible till the vessel was close to it. Fortunately, however, the coral was soft, and we sustained no damage, so in a couple of hours

we were warped off with a kedge, and anchored till the following day, when we turned towards the northern opening; but, owing to the want of wind, made but little progress towards it, merely passing a few miles beyond the town. The calm continuing the next day, the boats were got out and towed us for some time, but at length a breeze sprung up, and we neared the opening, which was exceedingly narrow, scarcely affording space for a frigate to pass through. The waves were tumbling on the reef with a stunning noise, and the breeze not being altogether in our favour, we were almost in despair of clearing the opening; yet on we went, both boats still towing—nearer and nearer we came to the breakers, and smaller appeared the chance of avoiding them; suddenly the breeze fell, and the current set us in towards them,—two minutes more and we should have been among them, but fortunately, the boats turned the vessel's head round in time, and as there was just room to tack, we were safe, anchoring in 12 fathoms water immediately afterwards. The crew soon commenced their usual amusement of fishing, and in a very short time we were provided with a magnificent garopa for supper. The next day the breeze being fair we passed through with safety, and left this beautiful island far behind us.

III.—*Remarks on the Country, Products, and Appearance of the Island of Rodriguez, with Opinions as to its future Colonization.* By EDWARD HIGGIN, Esq. (Communicated by H. E. Strickland, F.R.G.S.)

[Read June 26, 1848.]

THE Island of Rodriguez is one of the dependencies of Great Britain, and at present within the jurisdiction of the government of the Mauritius. It is situated in Lat. $19^{\circ} 30' S.$, Long. $63^{\circ} 50' E.$, within the tropics, and under the influence of the south-east trade-winds.

The land extends in a nearly due east and west direction for about 12 miles, with coral reefs running out about 3 miles more at the western end. The width varies from 3 to 6 miles, the narrowest part being towards the east, where the cliffs rise abruptly from the shore, with deep water immediately outside a barrier reef. The appearance of the island is striking from the ocean. A central peak of granite rises from the midst of a group of hills, divided from each other by valleys running north and south.

The chief substance of the land is granite, with beds of

overlying sandstone and limestone. Masses of red and grey granite are met with, which appear to have been subject to igneous action, and are much disintegrated. The subsoil appeared generally to be clay, a stiff gravelly earth with a fine loam on the surface—but the rapid growth of vegetation in such a climate prevents a cursory examination, such as mine, from being worth much.

The mildness of the climate equals or exceeds that of the Mauritius. The island is of too small an extent to feel the influence of “land and sea breezes,” but the steady trade-wind keeps the temperature cool and equable. The same cause produces great humidity, the quantity of rain that falls being very great.

There are springs of excellent water in the interior, but on the coast the natives are dependent on the water coming down the rivulets, which, after rain, is charged with calcareous matter, or tinged with iron, and in summer not unfrequently fails altogether. Several small cascades are found on the northern side. The chief stream falls over a rock about 60 feet high, and shortly after enters the sea, at the Port of Mathurin.

From the hilly nature of the land, the rain which falls is soon restored to the ocean: an hour after a shower has fallen, the thundering of the cascades may be heard some distance, but the disturbance soon ceases, and a tiny streamlet alone remains.

The “Port of Mathurin,” as the harbour is called, is merely a sheltered roadstead to leeward of the island, with the anchoring ground some $\frac{3}{4}$ of a mile from the shore. There is a deep and tolerable large basin, with 13 to 15 fathoms water (the sides of which are formed by precipitous coral reefs, over which the breakers roll incessantly), where small vessels anchor: but it would hardly be safe for large vessels, and Captain Kelly, of H.M.S. Conway, when on an exploring expedition in 1844, preferred anchoring his ship outside the reefs, in 35 fathoms. An opening in the reef enables boats to go backwards and forwards without much danger from the surf.

There is but small tidal rise, the variation being from 5 to 6 feet between high and low water. After a hurricane, storm-waves break on the shore, but, I found, without the damaging effects which result from them in the Mauritius.

Many fruits and vegetables thrive with cultivation. Thus oranges, lemons, limes, shaddocks, peas, beans, onions, turnips, and cabbages, are easily reared. The banana, plantain, custard-apple, strawberry, and raspberry are found wild. Yams and cassava, which form the bulk of the food of the inhabitants, are native to the soil. The potato does not seem to

answer; it has been several times introduced, but from some cause or other has died out.

Very fine Indian corn is grown, and a species of mountain rice. Wheat and oats have never been tried. The sugar-cane and cotton-shrub grow wild, together with several kinds of palm, among which are the mountain-cabbage, cocoa-nut, &c. The coffee-plant I did not see, but the nature of the country would be favourable for its growth. The trees consist of tamarind and acacia, the latter growing to considerable size, and bearing quantities of gum. There are also a few mango trees and tamarisks, and others with whose names I am not acquainted.

There is, however, no great number of trees, nor any approach to forest growth. The most common production found is the "*Vacquah*," or screw-pine palm, the leaves of which are so extensively used in Madagascar for making mats for the sugar of the Mauritius. Canes and bamboos grow in marshy places, but those we saw were not of elastic or superior kinds. The natives build their huts of them, and thatch them with the leaves of the palm.

There are no snakes or venomous creatures, except centipedes and scorpions, which are not uncommon in the huts, but are seldom dangerous. Large spiders, grasshoppers, and locusts are found, but no lizards, adders, or bats, that we saw or heard of. Wild cattle and pigs are said to inhabit the most westerly portion of the land, but in no great quantities. Wild cats, rats, and mice exist all over the island.

Guinea-fowl in large flocks abound everywhere. To protect them (for what use is difficult to conceive) the Mauritius government has introduced a code of Game Laws! the absurdity of which cannot but excite a smile at its legislation. There are few other land birds. The "*man-of-war*" hawk and the beautiful "*tropic-bird*" build their nests in-shore. A great variety of sea-birds make their homes in the cliffs and on the sandy islets, and their eggs form no inconsiderable portion of the food of the inhabitants. Poultry, ducks, and geese have been introduced and do well. The American whalers exchange their flour and biscuits for them and for water.

The seas abound with very fine fish—red and white mullet—"les gros yeux" and "captain's" fish being the most palatable. The latter form the chief portion of the exports to the Mauritius, and are, both when fresh and salted, excellent.

Our food for 58 days consisted of the above kinds of fish, with cassava. Land and sea-crabs abound.

According to a report made by M. Bacy, a Creole gentleman

appointed in 1843 magistrate of Rodriguez, the population consists of about 250 souls, one-fifth only being females! As might be expected, a sad state of immorality prevails from this last deficiency. It is a common thing for a woman to have 4 or 5 husbands; the children are brought up together—the husband for the time being acting as father. The race from which the natives have sprung is African and Madagascan. They are intensely black and ugly—with all the worst features of the lowest class of negro. The original founders of the colony were slaves from the Mauritius.

They are very lazy and often on the point of starvation, though nature so bountifully provides for them. They are fond of dress, and of ardent spirits, which they receive from the whalers in return for their poultry.

The great number of vessels during the last years wrecked on the southern reefs, which *run out several miles farther than marked on the charts*, has induced the Governor of Mauritius to introduce 6 Creole policemen, with a code of regulations, but without boats, ropes, guns, or rockets, wherewith to assist vessels in distress. British goods cannot be introduced except after having paid the heavy customs-dues of the Mauritius, for which no drawback is allowed. The chief magistrate has no power summarily to dispose of misdemeanors and offences, but is required to hear and collect all evidence, and to send the accused and his accusers to the Mauritius.

IV.—*Notes on the Island of Cocos, and two of the Galapagos.*

By Rear-Admiral Sir GEORGE SEYMOUR, K.C.B. (Communicated by the Admiralty.)

[Read November 13, 1848.]

THE Island of Quibo is about the same size as the Isle of Wight. Off the points ledges of rock generally extend; but there is an appearance of an anchoring-place in the intervening bays on the E. side, along which I proceeded in the *Sampson*, steam-vessel. The soil on the coast is good, but the interior is nearly inaccessible from the steepness of the cliffs and the tangled vegetation. We found traces of pearl-divers having visited the shores: but there were no inhabitants, except at the small islet of Ranchirea, between which and the N.E. end of Quibo there is good anchorage. A Frenchman of the name of Sorget is resident on Ranchirea: and this situation, as far as I could judge on a cursory view, seems more favourable for an establishment than any we saw on the larger island.

The 'Sampson' watered in the same place at which Commodore Anson completed his stock in 1746.

Quibo is luxuriantly wooded, and would be fruitful in every tropical production, but for the rains, which continue from April till November, and which it is likely, in its uncleared state, must tend to render it unhealthy.

It is subject to calms and variable winds, especially in the rainy season; and therefore not well adapted as a port of general rendezvous, although it may acquire more or less importance whenever a transit by either of the adjoining provinces shall be effected from the Atlantic.

We found the island of Cocos completely shrouded in heavy rain. The N.E. bay, in which the 'Sampson' was anchored in 20 fathoms, affords shelter from the prevailing swell, but is open to the N.E. We also visited the N.W. bay, where the landing was difficult from the swell which always rolls in there.

Vancouver's description of this picturesque little island is drawn with his usual accuracy. It is happily placed so as to supply ships, the voyages of which are prolonged by the variable winds that prevail in this quarter, with water and wood in abundance, and also with an ample supply of fish; but it does not possess either extensive or secure harbours.*

From thence we proceeded to Chatham Island in the Galapagos, and examined Stephen's Bay, Wreck Bay, near the S.W. end, and the watering-place called Fresh-water Bay, on the S. side. The 'Beagle' and 'Daphne' here completed their water in 1832 and 1845; but from the swell that sets on the shore, if large ships frequented these islands, I think it would be necessary to bring water to them in a tank-vessel, and to some sheltered anchorage, instead of leaving them exposed to the difficulty of getting under weigh from this place, where they must lie close to the shore, and on the weather side of the island.

Wreck Bay is inhabited by a native of Guayaquil, called here General Mena, and a person of the name of Gurney, who calls himself an Englishman. They maintain themselves by supplying the American whalers with terrapin; and having exhausted the shores of these animals, they now seek them in the interior, which they describe to be generally much more fertile than near the coast, and to contain many water springs. They have put into cultivation some acres about seven miles

* Cocos or Kulling's Islands are a small group lying in the parallel of 14° S., and meridian of 93° E., and were formerly occupied by a Mr. Ross and family. Prior to this they were uninhabited. The climate is mild and healthy, the thermometer scarcely rising above 84° or falling below 75°. — *Fide* Commander Kemphorne, I.N. in 'Bombay Geographical Journal,' 1845, p. 210. — ED.

from Wreck Bay, which is more sheltered and has a better beach than the other anchorages.

The French brig-of-war 'La Genie,' in August last, dug a well through clay, the lava being only superficial, but it was too near the beach, and the water in it, and in the ponds described by Captain Kellet, I found to be quite salt.

Having examined Post-Office Bay, in Charles Island, we next anchored in Black Beach Road, whence there is a path to the settlement, at which there is a well about a mile and a half from the sea, and five miles farther the spring called the Deep-stone, beyond the cultivated land so well described by Captain Fitzroy, which I visited with Captain Henderson.

The number of settlers is now reduced to about twenty-five, as the greater number have left the island, their chief occupation of supplying the whaling-ships having ceased with the exhaustion of terrapin in this island. On the lately cultivated farms every kind of tropical production* was growing in abundance; and the adjoining lands, which had not been cleared, appeared to be of the same character, and to be available for increased means of subsistence if the island were peopled.

It is stated in an account of a voyage in an English whaling-ship, published by Dr. Coulter, that he found coal in the hills in the interior of Chatham Island. The residents, who have gone over it, are not aware of its existence; but the assertion furnishes an additional reason for a thorough examination of the island.

Volcanic action in this group of islands is so generally marked, and there is so much lava on the shores, that the first appearance is discouraging; but the result of my short personal examination has been to give me a better idea of their resources, if in the hands of those who would apply industry and exertion to their improvement.

The climate is healthy and the heat moderate, considering the vicinity of the islands to the equator.

V.—*Observations on Coal in the N.E. part of the Island of Formosa.* By Lieut. GORDON, of H. M. brig *Royalist*. Communicated by the Admiralty.

[Read June 26, 1848.]

THE coal in the N.E. part of Formosa appears to extend in a direction east and west, and I have traced it through a succes-

* See further on the Galapagos Islands, 'Journal of the Royal Geographical Society,' vol. vi. p. 332; and on the plants and vegetation of the Galapagos Archipelago, refer to two papers by Dr. J. D. Hooker, in the 'Linnean Transactions,' vol. xx. pp. 163, 235—Ed.

sion of pits for a distance of 6 miles, from the village of "Kelung" or "Killon," due east.

About half a mile south of this, 50 feet above the level of the sea, I observed the westernmost coalpit in the west end of a range of hills running nearly east and west.

Proceeding east, along the south side of this range, at about two miles distance, I examined two pits, one on the east and the other on the west side of a southern projection of the range, 230 feet above the level of the sea, measured by the barometer.

Chinamen were employed digging the coal out at the further end with a sort of half pickaxe, and dragging it to the entrance on a sledge made out of a board.

The coal-seam was embedded between layers of soft blue claystone shale, between the layers of which iron was visible, but did not appear to abound. The sandstone of the neighbourhood was fine and of an ochreish colour. The surrounding soil was composed of a reddish and ochreous fine clay and sand; it was very rich, and, where not cultivated, was covered with high rank grass.

I ascended the hill over the pit, and was much struck with the appearance of the hills; the summits of all on this side rose abruptly to the north, and dipped with an inclined plane to the S.E. at an angle of about 25°. The sandstone, numerous cliffs of which presented themselves, also took the same direction as the coal, and the whole of the N.E. part of this island preserves the same features.

Proceeding east along the same range, about three-quarters of a mile from the last pit, we again met with the coal-seam, situated in a similar position, and about 50 feet higher than the last, and about 60 to 70 feet below the summit of the hill.

At this pit I agreed with the Chinamen to put on our vessel's decks 100 pecul, or 5 tons 19 cwt., for 8 dollars, or about 6s. per ton.

I again observed coal in an E. by N. direction from the above-mentioned pit, one mile distant. This was situated on the west side of a deep ravine running north and south, and probably terminating the range to the eastward. The coal appeared quite as good and as plentiful as at the pits already visited. The seam was 3 feet thick, and the height was about 300 feet above the sea. Iron appeared more abundant here.

Proceeding up the ravine I found in several places on the path-side coal projecting above the ground, and evidently the commencement of seams. The Chinamen conducted us to the opposite or east side of the ravine, and pointed out on the hill-side quantities of coal on the surface. The height above the level of the sea is 250 feet.

From the last-mentioned pit, in a S.S.W. direction $2\frac{1}{2}$ miles, near the village of Cong Loo, coal was again observed at the head of a valley running to the S.E. about one mile from the sea and 300 feet above the level.

The valley here ran east and west, and appeared to terminate where we ascended to the coal. The hills in this valley did not here present the same features, but the northern faces of them sloped down and the tops were irregularly peaked.

About one mile to the N.E. of us rose a very remarkable peak, which I have named "Dome," and is one of the most prominent features of the coast.

During my observations I have seen nothing but sandstone, even in the beds of the rivers, and along the sea-shore quantities of coral. The luxuriance of the vegetation and richness of the soil are beyond anything I have hitherto seen, and the regularity of the hills throughout is very striking. There was, however, very little large timber, the greater portion of the hills being clothed with underwood.

No shelter presents itself from Dome Peak, east, until the N.E. point is nearly reached, when a small cove with a fishing village, runs in S.E., and nearly severs the N.E. point from the island. This is named by the Chinese, Petow, or Nose. All the rock in this neighbourhood is a fine blue sandstone, and dips at a small angle very regularly to the S.E.

Last year, before the existence of coal was known on this island, when running along the coast in lat. $22^{\circ} 42'$ N. and long. $121^{\circ} 00'$ E., we passed, about 2 or 3 miles from what appeared the entrance of the river, through several miles of a blackish water, apparently black with coal-dust.

The Chinese settlement, furthest south, on the east coast, is in $24^{\circ} 37'$ N. latitude, or 31 miles from the N.E. point. Just to the southward of this a chain of high mountains, rising perpendicularly from the sea and ascending to the height of about 10,000 feet, stretch to the S.W. and divide the Chinese part of the country from that inhabited by the aborigines: this range terminates at the south point of the island. The only port we could discover on the east coast was that of So-a-ou, but it is by no means safe.

To the westward of Kelung village I examined the country for upwards of 4 miles in a W., and then in a N.W. direction, following the bank of a mountain stream which fell into the west creek of Kelung. The features of the southern range of this valley resembled strikingly those of the range west of Kelung, and were even more regular, forming a succession of inclinations at about 15° to the S.E. and nearly perpendicular to the N.W. West of Kelung Harbour alongshore the coast

presents the same regular and remarkable features for 5 miles, when a singular sandstone peninsula, rising perpendicularly from the sea, appears to terminate on the coast the regularity of the stratification.

The country had the same rich and beautiful appearance and seemed more thickly inhabited and better cultivated than to the eastward.*

VI.—*Successful Journey to the Karakorum Pass, in Central Asia.*

By THOMAS THOMSON, M.D., Assistant-Surgeon on the Bengal Establishment, and Commissioner to Tibet. In Extracts from a letter from Kashmir.

[Read Jan. 22, 1849.]

“You know that my intention in proceeding to the northward from Le was to visit the highest part of the mountain range lying between Ladakh and Yarkand. My road was, therefore, that followed by the merchants who trade between these two countries, who are the only travellers on this route, Yarkand being subject to the Chinese government, whose system of seclusion is there in full force. Early in spring and late in autumn, the merchants, after crossing the mountain range to the N. of Le, follow the course of the Shayok river; but a great part of the course of this stream is deep and rocky, so that from June till October it cannot be forded, and hence during these months this route is impracticable, and another shorter but very mountainous road takes its place. I scarcely know how to explain this road without a map. It ascends what I have for convenience called the Nubra Valley, viz., that of a large tributary, which having been visited both by Moorcroft and Vigne, is laid down in the maps, and thence strikes across the mountains in a N.E. direction, till the Shayok is gained in the upper part of its course, above the unfordable part. In Vigne’s map there is a fancy sketch of this route laid down in it, though it is made much farther from Nubra to the Shayok than it actually is.”

“*Kashmir, October 8, 1848.*

“I have thus (as my last letter was written on the 7th of August) a journey of two months to give you an account of. This has been the most novel as well as the most interesting

* The quality of the coal found at Formosa has been found good, having undergone an analytical examination at the Museum of Economic Geology; but the value of the discovery, in a commercial point of view, is diminished at present by the expense of freightage. Lieut. Gordon had it placed on board the *Royalist* for 6s. per ton, while the cost of delivery at Hong Kong would be 2l. per ton, and English coal at the same place sells for 1l. 8s.—Ed.

and important part of my travels, and will be better explained by the enclosed map than by any lengthened description. My letters were written from Panamik in Nubra. On the 8th of August I started, making two marches along the valley. On the 10th I entered the mountains, making an abrupt ascent over bare granite rocks of 4500 feet, and descending into a valley not quite 1500 below the top of the ridge. The valley, you will see, enters Nubra below where I left it, but its lower part is quite impracticable. On the 11th and 12th I ascended this valley, which was rather open and fearfully stony. The ravines on both sides contained glaciers, and near my camp of the 11th of August a very large one just entered the valley, terminating at a little below 15,000 feet. On the 12th I was as high as 16,800 feet, among large patches of snow, and on the 13th I crossed the Sassar Pass, and descended into the valley of the Shayok. The pass was over an immense glacier, and several other smaller ones were crossed, which were very laborious, because, entering the main valley from lateral ones, they just crossed it, but did not extend any way down it; at every lateral valley, therefore, I had to climb over a huge mass of ice, descending in the intervals among huge masses of stones. The pass I did not measure, but I guess it rather under 18,000 feet. The descent to the Shayok was very abrupt, first over the glacier, then over huge moraines, the leavings of the glacier when it extended farther down. My camp at Sassar, as this place is called by travellers, was 15,500 feet, and the bed of the river, wide and gravelly, was about 500 feet below me. The country was quite desert, but both on the pass and round Sassar I got many plants of interest. In spring and autumn the Shayok valley is practicable, and the Yarkand merchants take that road, instead of the one I followed, but it is not available till the middle of October or thereabouts, the water being too deep to be forded. A few miles above Sassar two very magnificent glaciers descend from the mountains, and completely cross the bed of the stream, which runs below them. The first of these I got across, though it was very rough and uneven, and the passage of the moraine of loose stones, which on either side rose 50 feet higher than the surface of the glacier, was attended with much difficulty. The second glacier was, however, reported quite impracticable by men whom I sent on purpose to examine it. The road to Yarkand till 10 years ago, when it was blocked up by these glaciers, lay up the Shayok. Now it has become necessary to follow a more circuitous route. Halting on the 14th at Sassar (on which day there was a smart fall of snow), on the 15th I crossed the Shayok, ascended a ravine on its right

bank, and through an open valley, which was, though with very little ascent, a pass; the stream at the beginning ran west, terminating before half-way, when another sprung up running E. This I followed to its junction with a larger stream, near which I encamped. On the 16th and 17th I ascended this stream, which, after a few rocky places, at first ran through a wide, gravelly valley, with high mountains and numerous glaciers in the ravines. On the 18th of August I found that the road left the valley, which had become narrow and rocky, and making a short, steep ascent up a gravelly ravine, I suddenly emerged upon a wide, open, somewhat undulating, gravelly plain, extending 8 or 10 miles; and on looking south, I perceived a continuous range of lofty snow mountains, extending uninterruptedly as far as the eye could reach E. and W. Through these I had evidently passed while following the river bed on the 16th and 17th. The northern part of this plain (the elevation of which averaged about 17,500 feet, and rose in parts to near 18,000, so that it is, I presume, the *highest flat plain on the globe*) was excavated into a wide, open valley, the bed of which may have been 17,000 feet, and which was traversed by a small stream running from E. to W., and, as I was informed, joining the Shayok. The mountains to the N. were rounded, not very high, and almost free from snow. On the 18th I encamped at the edge of this plain, and on the 19th proceeded to the top of the pass, which was the limit of my journey. I found the road up an open, stony valley, terminating in a snow-bed; but long before reaching that, I turned abruptly to the right, and after a short, steep climb over bare stones, found myself on the top of the pass, height 18,604 feet. It was quite free from snow; but on the slopes above there were large patches in shady places, but no continuous snow-beds. To the N. a small stream, commencing just below the pass, could be traced for about half a mile; at the end of which distance it disappeared among hills, by which the view is limited. Along this small stream I was informed the road to Yarkand lay, but through an absolutely desert country, so that I had determined for this and other reasons not to attempt to go farther. First, this portion of the country was thoroughly barren, and I knew that on the edge of the habitable portion was a Chinese post, where I should have been stopped, if not seized. Secondly, from Nubra there is no subsistence for man or beast, and even fuel is barely procurable above 17,000 feet. Thirdly, I was suffering very much from the effects of the rarity of the air, which acts with great severity on me, producing constant head-ache, always worst at night. I think I have determined the points of most interest

both geographically and botanically. The remainder will be done some day from Yarkand, but cannot till the Russians take it from the Chinese.

"The natives of Ladakh and Nubra have no name for the extensive range of snowy mountains which runs from E.S.E. to W.N.W., the snowy peaks of which I estimate to be at least 24,000 feet, and in general these names are confined to localities (towns or encamping places); even rivers have no general names. The name Karakorum is confined to the range N. of the table-land, and in particular to the pass which I ascended. This range, which probably nowhere exceeds 20,000 or 21,000 feet, seems an offset from the snowy range, 20 or 30 miles farther W. It is curious, that though much lower than the range farther south, it is in fact the dividing range between the central or Yarkand basin and the basin of the Indus, several streams breaking through to get to the Indus. Darwin, I recollect, observed a similar circumstance in the two parallel chains of the Andes. The table-land is, as far as I recollect, the *most elevated plain in the world*. It is highest to the W., but must there dip suddenly to the valley, or rather ravine, of the stream which I had ascended, as that runs between it and the snowy range. To the E. it sinks very gently, almost imperceptibly, and it is bounded by low mountains 5 or 6 miles off—the average elevation of the plain is probably about 17,500 feet; and a low range of hills, which occupy its northern border, before the descent to the Shayok, may attain a height of 18,000 feet. Its surface is covered with small, water-worn, and angular fragments of all the surrounding rocks, and its substance seemed to consist of a hardened calcareous clay, of which masses also occurred, rolled on the surface. The rock, where visible, is limestone. Altogether, the general features at once suggested the idea of the bed of a lake, and I have hardly any doubt that such is the explanation of this very curious tract of country. North of the plain limestone reappeared, alternating with slate, and covered with alluvial clays and conglomerates.

"Botanically, I made many acquisitions during this journey, but principally in the earlier part, between Nubra and the Shayok. The species were many of them new to me, but the forms almost entirely those of Europe and North Asia. Many Cruciferae, especially *Draba*, *Astragali*, *Saxifrages*, *Gentians*, *Lychnis*, *Cerastium*, *Thalictrum*, *Papaver*, *Potentillae*, *Sibbaldia*, &c., with *Carices* and grasses. The most curious plant was a species of *alsine*, which formed extremely dense and hard tufts a foot or more in diameter. It began to appear about 15,700 feet, and continued to 18,000. On the table-land the only plant which occurred was the dense, tufted

alsine, large green patches of which were common. I except the bank of a small streamlet, which produced a specimen or two of the common species, showing that want of water alone was the cause of their absence on the plain. The pass (of Karakorum) was also perfectly dry, a mass of stones without a vestige of vegetation, phenogamous or cryptogamous; nor did anything of the kind appear till at least 500 feet below, and close to the bottom of the valley. Here a purple-flowered crucifera was highest. The whole number of flowering plants which rose above 17,000 feet was 16.

"I returned by the same route, and reached Nubra on the 2nd of September. It was originally my intention to descend the Shayok, but I found no prospect for more than a month of doing so, and I could not afford to remain so long."

Dr. Thomson reached Le on the 11th of September, and left it on the 13th, taking the most direct road to Kashmir, which city he reached on the 5th of October, in time to study the natural history of that interesting valley before the close of the season.

VII.—*Report on the River Nunez, its Trade and Resources.* By Lieut.-Commander THOMAS LYSAGHT, R.N. (Communicated by the Admiralty.)

[Read 22nd January, 1849.]

At present about fifteen to twenty vessels, averaging from 200 to 300 tons, visit the river yearly. The majority of these are foreign—mostly French. The trade is, however, in the hands of British traders to a great extent, the natives having more confidence in them, and the more respectable French merchants preferring dealing with them to dealing with the petty traders of French extraction. The trade, before the recent troubles, has amounted to as much as 40,000*l.* two-thirds of the imports being British manufactured goods and salt, the remainder French small wares and German arms. The exports were gold, ivory, hides, wax, and of late a large and increasing quantity of ground-nuts, nearly all of which are for the French market. Coffee of a good quality is grown, but owing to the prevailing low prices is now neglected. A considerable part of the gold and ivory which formerly came down the river finds its way out of the Foulah country by new channels, as by the river Tanunany, Mellacouvi, &c. The slave-trade has entirely ceased in this river, and the great demand for labour in cultivating the ground-nut will probably prevent its revival.

The river banks are inhabited by three distinct races, viz.

the Bagas, the Nelloes, and the Landamahs. The Bagas are a very retiring people, of pastoral habits, who live towards the mouth of the river. They are not in any way mixed up in the recent troubles. The Nelloes, or Nellahs, are a more intelligent but unprincipled race, which has emigrated from the north-westward, and forcibly established themselves on both sides of the river, from Victoria Point to Ropass, where they have much trade, being assisted by men of colour from Sierra Leone. The Landamahs are a quiet people, the original possessors of the Karcandy country, but whose power is fast passing away under the pressure of their more warlike neighbours, the Nelloes and the Foulahs from the interior, whose trade has brought them down in great force, and who have made the country of late years pay a regular tribute to them.

The recent dispute which has interrupted trade appears to have been a war of succession, or perhaps a question of legitimacy, between Toukah the elder, and Marjoryah the younger of the two sons of the late King of the Landamahs, whom all the traders have been accustomed to look to as the rightful rulers of the Karcandy country. This dispute is not very easy for Europeans to understand, but it appears that Toukah was nominated chief by Bouchainer, a very old person, who has that power as a kind of high priest; but Marjoryah, being in greater force, has disputed his elder brother's claim.

I had three interviews with Mahaden, the Foulah chief, who, finding that nothing was to be got from me, after much procrastination decided in favour of Marjoryah. The thing, I fear, is however by no means settled, as both the Foulahs and the French schooners of war must leave the country in the rainy season; and from the fact of Toukah, the unsuccessful candidate, having burnt his town Walkeria as soon as the thing was decided against him, and retired into the woods, it is most likely he will await the return of the Foulah caravan to their country, and attack them in an ambush, as was done on a former occasion.

I thought it right to call on the successful candidate, and took an opportunity, without expressing my opinion on his rights, to read to him my desire that he should protect the British traders in their peaceful rights, which he promised to do, as did the chiefs of his party. I likewise gave Lantina Towl, a Nelloe chief, and principal adviser of the new king, to understand he would be severely punished if he acted again in a hostile manner to Mr. Beaise, the chief of the factory at Ropass. The whole of the chiefs expressed their determination to protect the British traders as long as they remained neutral, and I have no doubt they will do so.

The appearance of a ship of the Grappler's force will have had, in my opinion, a very beneficial effect on the minds of the natives. I was visited by a great number of them, mostly from the interior.

Having done all that I could in the matter, I left the river on the 17th, leaving there the Amaranthe and Fine, French schooners of war, and a Belgian war schooner, which arrived during the night.

VIII.—*Extract from the Reports of M. HOFMANN, Chief of the Expedition to the North Ural.* (Communicated to Sir Roderick I. Murchison by Admiral Lütke, Vice-Pres. of the Imp. Geog. Soc. of St. Petersburg.)

[Read Jan. 8th, 1849.]

FROM Tobolsk M. Hofmann had descended the Ob in a boat. On the 27th of June the expedition had reached the mouth of the small river Voiker, which takes its rise in the Ural, and falls into the Ob in lat. $65^{\circ} 50'$. By this river the expedition arrived at the Ural range.

"We ascended the Voiker for two days, up to the place where our guides were expecting us with their reindeer. We crossed the mountain ridge, not without risk, owing to the rapidity of the torrents, which the thaw had caused to overflow. On the 7th of July we reached the eastern side of the chain, in lat. 66° , where bad weather detained us for four days. On the 11th of July we separated from Stroefoki, who took a southern direction, and proceeded towards the N., following the base of the mountain chain, which here rises abruptly from a naked plain; and though it be not very high, yet, owing to the steepness of its slope, its wild and rugged aspect, and the nakedness of its summit, it appears much more elevated than it really is. I do not think that the *Pai-ier*, the highest of its mountains to the N. of the 66th degree, has more than 3000 feet of absolute elevation. We had scarcely started when we experienced the first attacks of a scourge, little dangerous in appearance, but to which we nearly fell victims, viz., gnats; we had to traverse a space of about 2° lat., which, notwithstanding its rich pasturage, the nomads avoid like the plague, on account of the innumerable swarms of these insects, which torment the reindeer even to their destruction. Indeed, their numbers increased with the heat in an incredible manner; our poor beasts, which could neither eat nor rest, pined away

before our eyes ; every day many of them died, and one day, hotter than usual, we lost twenty.

“When, on the 8th of August, we arrived, after great difficulties, on the banks of the Ussa (lat. $67^{\circ} 46'$), we literally could not proceed a step farther. Fortunately we soon found nomads, who furnished us with fresh beasts, with which we were enabled to continue our route, and arrive on the banks of the Kara on the 27th of August. The vicinity of the sea delivered us from our persecutors, but brought, on the other hand, cold and foggy weather, which much impedes our movements. . . . Now a few words on the chain of the Ural. Having seen it so near to the banks of the Ob,* I had imagined that it took a N.E. direction ; but we found that towards the parallel of Obdorsk it suddenly turns almost due E. for a distance of from 30 to 35 versts, after which it again resumes its primitive direction from S. to N., which it does not leave until lat. $68^{\circ} 29'$, where it rapidly declines towards the Tundra ; and from thence to the sea ranges of flat and rocky hillocks are seen running from E. to W., parallel with the sea-coast, in the shape of downs. To the E. and N.E. the Ural is bordered by the Tundra, across which I observed, rising in the distant horizon, some detached small mountains ; there is no immediate connexion between the Ural and the mountains which are said to extend along the river Velikaya to the island of Vaigach. I do not mean to say that there is no relation between the elevation of these two systems, but the real Ural ends here, without reaching the sea-coast. I have ascended the mountain which forms its northern extremity ; it is surrounded on three sides by small marshy lakes. From the top of the mountain, the sea may be seen in the distance. . . . I have nowhere seen any snowy mountains, but many heaps of snow were observed in the mountains as well as in the plain ; the country we have traversed is poor both in animals and plants. . . . Several ravines in the Tundra have enabled me to examine the nature of the rocks : they are schist, freestone, and chalk ; and although I have not found any fossils, I hold them to be Silurian. The metamorphic schists of the Ural belong to the same formation.” †

* This refers to a previous observation. M. Hofmann, on arriving at the mouth of the Voiker, was astonished to find himself so much nearer the chain of the Ural than he had expected.

† For further information on the geography of the Ural, *vide* Journal of the Royal Geographical Society, vol. viii. p. 389 ; and the elaborate paper by Sir Roderick I. Murchison, with map by J. Arrowsmith, vol. xiii. p. 269.—Ed.

IX.—*Extract of a Letter received from Captain STOKES, of H.M. Steam-vessel Acheron, dated 13th June, 1848, at Simon's Bay. (Communicated by the Admiralty.)*

[Read Jan. 8th, 1849.]

AMONG the most important projects afloat for the improvement of this colony may be mentioned the establishment of extensive cotton-plantations at Port Natal and its vicinity. The plant is obtained both indigenous and from foreign seed: the preference seems awarded to the native production, some specimens of which, recently exhibited at Graham's Town, are reported to be worth at least 1s. per pound. The cultivation of indigo has also been attempted.

X.—*The Country of the Free Laos. By DR. GUTZLAFF.*
(Communicated by Sir George Staunton.)

[Read December 11, 1848.]

NONE of the nations of Asia has attracted so little attention as this numerous race, though they have a written national history which commences a few years subsequent to our æra. They have silently spread over the whole interior of the peninsula which they inhabit, penetrated through the densest forests, and subsequently cleared the land of its gigantic trees and luxuriant vegetation. They have likewise become expert miners, and have produced the greater part of the gold, silver, and copper which now circulate in Annam, China, and Siam.

They are divided into many tribes, which speak nearly the same language, with slight variations, and they have attained very different degrees of civilisation. In the north they extend to the mountains of Yun-nan, Kweichoo, Hoonan, and Kwangse, where they are known under the names of Yaou, Meantsze, and Lolos. A great part of them have yielded to Chinese civilisation, and become subject to the sway of the mandarins, whilst other tribes in the more remote recesses of the country retain their independence, and show a fierce spirit of resistance. On the borders of China and the peninsula they are distributed in numerous townships, with scarcely any connexion among them. They are peaceful and industrious, but when goaded to opposition, defend themselves with the resolution of despair. Towards Assam, where they have intermixed with the western tribes on the frontiers of Tibet, they are most rude and uncivilised, and often engage in feuds with their southern neighbours. We know them there as Moamareas, Nagas, Khamties, Singphoos, &c. All along the Irawaddy,

between the Birmah dominions and the Saluen river, to the sea of Martaban and the north-western frontiers of Siam, they are the humble vassals of Birmah. There is every probability that a commercial intercourse with Martaban will be gradually established, and some Englishmen have for the first time visited the chief of Lapoung. The King of Birmah claims nine principalities under the name of Kosanpri. The inhabitants being much oppressed by the Birmans, it is very probable that they will, during the present troubles, endeavour to regain their freedom. As this territory, however, does not fall within our description, and we have already alluded to the tribes which live under Siamese and Cochin-Chinese rule, we confine our present remarks to those who are called by the Chinese Laouchang, and who enjoy the largest share of liberty, as they merely acknowledge the nominal sway of some petty mandarins. They are less known than any other Laos tribe, though they inhabit a territory of considerable extent.

The frontiers are, to the north, the province of Yun-nan, as far as 22° N. lat., the Le-seën river constituting the boundary; to the south, the tributary Laos states of Siam; to the west, those of Birmah; and to the east, the Laktho territory. Those tribes which are north of 22° N. lat. acknowledge nominally the Chinese sway, and their chiefs, who bear the name of Thoosze, are confirmed by the mandarins in their office.

The same chain of mountains which separates Cochin-China from the Moi country crosses the whole length of the land. Numerous streams rise on the eastern side of the mountains, and flow into Tunkin. The western side constitutes the Himahpa, the classical ground of the Laos nation and frequently mentioned in their romances. A mountain forest extends to the territory of Kosanpri, where it is known under the name of Pahimpan, and is visible as far as Amrapoora. Here the founders of the nation are said to have lived, and to have extirpated the wild beasts from the territory. As these romances are of ancient date, and as there is a series of annals commencing a few years after our æra, it is certain that the civilisation of this race must be referred to a very remote epoch. In assigning it to a period after the accession to the throne of China of the Han dynasty (about 150 B.C.), we shall probably not be far from the truth. At that time the whole peninsula was still in a state of barbarism, and the scanty population lived not unlike the mountaineers of the present day. Civilisation came at length from India, and the Shan race only at a late period yielded to the influence of Buddhism.

The mountains contain gold, silver, copper, and iron; some tin and lead have also been discovered, but in very small quan-

tities. The metals are principally sent to China, very little being exchanged with Tunkin, Birmah, or Siam.

The forests contain some of those magnificent trees of which Wallich discovered the first specimens in Pegu. The varnish-tree grows in perfection. The natives themselves understand the manufacture of beautiful lacquered ware, and export some to their neighbours. Fruit-trees are very scarce, and not tended with proper care. The fan-palm alone thrives, the climate, on account of the great elevation of the country, being too cold for other species. The inhabitants cultivate few vegetables, and confine their attention to rice, which is of an excellent quality, white, and gelatinous, but grown in such small quantity that they are obliged to import considerably from Birmah and the south. They are indebted for salt to their rulers, and the moment one of the chiefs proves refractory, the supply is stopped, until they yield implicit submission.

The silkworm is raised in these regions, but the silk is coarse. The natives manufacture some for home consumption, but receive their best silks from China, which they re-export to Birmah. Bullocks are numerous, and strong of limb, and though small, very useful for agricultural purposes. The Laos export many head of cattle to Ava. The principal force of the chiefs consists of cavalry.

The boundaries of the country are ill-defined. Commencing at the north-eastern frontiers, where the Le-scên river forms the boundary, we reach the Keae principality. This with the Na state forms an extensive valley at the foot of stupendous mountains, bordered on the north by the Lo-so river, a tributary of the Kew-lung. The soil is fertile, and exhibits a great variety of vegetation. The inhabitants are agriculturists, and often suffer from dreadful inundations when the rivulets which descend from the heights are swollen with melted snow.

Crossing the Lo-so, which here is a fine navigable river, we reach the Kanlanpa state, hemmed in between mountains, as well as Lun, a small territory situated towards the south. The Kew-lung joins the Lo-so, and thence takes a south-westerly course. The people are employed in mining, and navigate the river downwards in frail boats, with the produce of their own country and that of China. They are enterprising, and inured to hardship.

Having passed the Kew-lung, we reach Lung, a narrow strip of land between frightful precipices and the river. North of the stream is the Yang country, an extensive mountainous district, interspersed with many fertile valleys. The popu-

lation is very small and poor, and the inhabitants are shut out from all intercourse with other parts of the world. South of it is the Chayle country, and adjacent to it Hoe and Chay. All are ruled by their own chiefs, who have no common interest and often oppose each other. The last-mentioned districts, with Kwan, are situated in a long valley between the Man-loo river and the Kew-lung. There is a tolerable extent of cultivable ground, but the principal part consists of barren rock. Beyond this are the Mang and Ma principalities, the boundaries of which are, on the one hand, the river of that name, and on the west the Mang-leën stream. The land is here fertile, and the population considerable. The most north-western is the Mang-leën state, which constitutes the boundary towards the Laos country, subject to the Birmahs.

The government in the territory of the northern chiefs is patriarchal, and the Chinese rule is merely nominal. The relationship between rulers and subjects is of the most intimate order, and the Laos are strongly attached to their superiors. The men are undersized, having Chinese features, and a yellowish complexion; the women are symmetrically formed, with beautiful countenances and bright eyes. Instead of being subject to their husbands, they generally direct the household affairs, and are favourably distinguished by chastity and decency from those of Birmah. It is impossible to refuse the character of manliness to these people, and not to admit their great superiority over their brethren in the south. They seldom leave their homes, and up to this moment no European has trod on their soil.

The difficulties of conveyance being very great, there exists little intercourse between the various districts, and still less with foreign countries. The principal exports are either pure metals or various ores. Ore is taken in considerable quantities to the province of Yun-nan, and occasionally finds its way to Canton. As the Laos are not acquainted with the best processes, there is a great waste in smelting, and their tools for digging are so clumsy that only the richest ore near the surface will repay the labour. Their goods they transport on horses and bullocks. In their dealings they are very honest, and frequently become victims to the over-reaching Chinese, especially in speculations in the precious metals.

Every housewife has her weaving apparatus, and manufactures the silk and cotton stuffs for the family. It is, however, a sign of gentility to wear a Chinese vest, and the richer classes are never without a full dress of beautiful silk.

The principalities to the east of the mountain range, which

borders on Tunkin, are of much greater extent. The three principal states, beginning from the south, are Ninh-bien-chaou, Thugri-chou, and Don-ho. The first presents a soil of varying surface, stony, and unpromising; the second is intersected by a mountain range, and has on the south extensive forests; the third, separated from the second by the Sonchay river, which runs into Tunkin, contains extensive and fertile plains with productive rice-fields, and stately forests to the south of the Leseën river. This is perhaps the best part of the whole territory. Don-ho has a very large population, and abounds in agricultural produce. The natives are mixed with the Tunkinese race, and are the most civilized among all the Laos tribes. The chiefs, being very frequently oppressed by their neighbours, maintain a small army for their protection, which has attained some celebrity for horsemanship.

So far as our knowledge extends, they have never been subjected to a foreign yoke. They rear excellent horses, export raw silk, and live a life of comfort and content. They undertake occasionally long journeys, and some chiefs have even visited Bangkok. Upon the occasion of this visit their superior appearance, so unlike that of their brethren in the south, their wealth and intelligence, attracted the admiration of every one, and the Siamese could scarcely be brought to believe that these chiefs belonged to the same race as the Laos of the south.

The territory to the west is hilly and woody; the population much scattered, and a great part of the land is uncultivated. The royal tiger here takes up his abode, the rhinoceros finds shelter, and the forests swarm with deer.

The principal place is Leng, on the south-western extremity, which has been magnified into a kingdom, with eight villages under its control. Though the chief is nominally tributary to Birmah, he keeps up a constant intercourse with China, and many merchants of that country are settled under his jurisdiction. He does not consider himself a subject of the Golden Foot, but belongs to the confederacy known in Birmah under the name of Ta-rout-shan. The southern parts are fertile and produce rice and fruits; the central parts contain many mountains and forests, in which is found the elephant. In the north the mountains are said to be very lofty. At a place called Bodaeyin, there are gold and silver mines, which also yield some copper. A Chinese traveller mentions likewise a reddish kind of sulphur and lead amongst the productions, as well as tin. The Birmans have done their utmost to obtain possession of these valuable mines, but without success. A small per centage is sent to Ava annually, but

the Laos themselves are the real masters, and very jealous of any foreigner obtaining a footing there. A great quantity of the precious metal goes to China for the manufactures of that country, and the chief is said to derive a revenue of 350 catties of silver from the mines, a sum, if anything, rather underrated. The mandarins of Yun-nan, anxious to obtain a share in this great wealth, have left no arts unemployed to establish their mastery over this part, but have failed, owing to the rivalry of the Birmans. Near the capital rubies and emeralds are collected, and are sent both to Bangkok and to Ava, but in greater quantities to Ava, from whence they have found their way to Hindostan. They are considered of a very inferior description.

The regions which border immediately upon the Pa-hima-pan eastward are less known than any other. On the authority of the Chinese, we know that the states of La and Meng are situated there. The former consists of large forests with small patches of cleared ground; the latter is of some extent, and said to comprise 28 cities. Tin is said to be found in the latter territory, and some rock-salt, a very precious commodity in those regions, is likewise found there. The intercourse is entirely confined to China: the country is rich in iron and silver, and the soil in many places fertile. The population appears to be considerable; Vinan, the most north-western of the free states, is a very narrow territory, bordering on Yun-nan. The exact geographical position of the above places is unknown, and Chinese travellers give only the distances from one to the other, according to the number of days it took them to reach them. For instance, they say, from Leng to La seven days' journey, from La to Meng eleven days'. That so many days should be required to make such short distances sufficiently proves the mountainous nature of the road, and the little intercourse that exists between the various tribes.

We have thus, with very insufficient guides, traversed the whole of the Free Laos territory. It is a very interesting country, and the residence of a people who more than any other in Asia have lived entirely to themselves. The Chinese, impelled by war or starvation, have repeatedly in large numbers immigrated to this territory, but gradually amalgamated with the natives, and contributed by this fusion to render the original race stronger and superior. A few of the principal chiefs visit from time to time the Chinese frontier station with a trifling tribute, and whenever the Emperor intends to appear in great state, he orders them to come to the capital to grace his audience with a multitude of tribute-bearers from all regions. This, however, is the whole extent

of the excursions of the Free Laos to foreign countries, and beyond this they know nothing about the surrounding empires. It is probable that their ancestors were animated by a different spirit, for besides their endeavours in the sixteenth century to subjugate the country to the very sea-coast, they engaged also largely in trade. The difficulties in the navigation of the Mekom and the obstacles presented by the many mountains appear to have checked the repetition of a similar march. In 1641 some of their merchants reached Batavia, which induced the Dutch company to send an envoy, named Wusthoft, to their principal settlement, Wink-jan (Vinan?) from Kambodia on the river Mekom. The journey took him two months and 21 days, during which time he reckons that he travelled 250 leagues. The numerous falls in the river presented great obstacles to his progress, and the boatmen had often to leave their barks and to proceed overland for a considerable distance, and then to re-embark again where the river-bed was smoother. He also passed through thick jungles and over dangerous mountains. The chief received him with high honours, but he had to perform the prostrations in imitation of the Chinese court etiquette. The country was at that time at war with Tunkin and Pegu, but carried on a peaceful intercourse with China. The goods which the envoy found in the market (the principal object of his researches) were gold, iron, precious stones, lac, gum benzoin, ivory, rhinoceros horns, raw silk, silk piece-goods, and crystals. A similar catalogue, with the exception of silk, is given in the accounts of Chinese merchants, and such are the articles of trade which pass the frontiers. This undertaking remained without results, and an attempt of the same kind made in the same year by the Portuguese, who sent thither two priests, likewise miscarried, and the envoy was sent back without even being admitted to an audience. Previous to this enterprise many efforts had been made by missionaries, but without success. They were anxious to penetrate either from Upper Kambodia or Tunkin, but could not effect their purpose. A few adventurers had previously been more fortunate, and found their way through Siam, over high mountains and through teak-forests, but without making any discovery worthy of notice. When, however, swarms of Laos in the middle of the sixteenth century overwhelmed Kambodia, the Portuguese, who were established in the factories of that country, assisted the natives to drive the enemy away. In this struggle the King of Kambodia lost his life, and his realm was on the brink of total ruin, when the young prince, his son, under the guidance of these foreign merchants, after a struggle of ten

years, reconquered his country and annihilated the invaders. The particulars of this war have been described by no historian, though perhaps worthy of being recorded as the desperate effort of a nation to possess themselves of a territory bordering on the sea. It is not probable that the Laos appreciated the advantages which would accrue to them if they could carry on trade with foreign nations directly. Their only impulse seems to have been to follow the Mekong to its mouth, and to settle on the alluvial soil along its banks. They did not come without their moveables to the country on which their choice had fallen, nor did they leave their golden treasures behind. All this became a prey to the Kambodians, who thus obtained some compensation for the injuries which had been inflicted on them. The young king was so elated at his success, that he sent an envoy to Malacca in 1598, partly to acknowledge his obligations to the Portuguese, and partly to ask a Jesuit to reside in his territory. This request was readily granted, and many distinguished priests settled themselves in the country. Determined and persevering as were the Jesuits, they were unable to form a settlement in the Laos territory, though they had at their command all the advantages which Kambodia could furnish.

The British penetrated to this country from Pegu before 1587, and members of the Company's factories from time to time visited these regions, until war and rebellion among the Laos prevented their progress. For more than two centuries all enterprise towards this distant land ceased, until the victories of the English in Birmah, and the acquisition of new territory again led to new journeys to the south-western states. The age for seclusion being now past, it is by no means probable that the Laos will be able to keep themselves much longer from intercourse with civilised nations.

When we compare the position of the country with that of several others in Hindostan under the same parallel, the difference is very striking. Whilst mighty conquerors have repeatedly overwhelmed Hindostan, this peninsula has remained under its native princes. The Laos, who from the nature of their territory might have imbibed a spirit like that of the Afghans, have, on the contrary, always been considered a peaceful people. Beyond incursions into the neighbouring territory, in retaliation of prior aggression, they have, with the exception only of their migration to Kambodia, remained quiet in their inapproachable mountain fastnesses. They possess fire-arms, and are good marksmen, but in their warlike expeditions they avail themselves chiefly of the bow.

The fame of the treasures of this country has fortunately not

yet induced conquerors to direct their steps hither. Kublai heard of the mountains that produced gold, but the conquest of Yun-nan employed all his forces. When he finally made an irruption into Birmah from the side of western Laos, his army was decimated by disease, and disheartened by constant reverses, so that nothing could be effected. After him the Tunkinese, being in possession of the southern part of the Laos country, endeavoured to possess themselves of the gold-mines, but they likewise met with disappointment. Many of the inhabitants of Tunkin were, however, permitted to settle, and they proved an industrious race of people. Their attachment to Tunkin was not so strong as to make them traitors to their new rulers, for the Laos princes govern with patriarchal simplicity, whilst the Tunkinese government has always striven to make its subjects slaves.

When finally the Chinese emperor Keën-lung, in the last century, determined upon seizing the gold-mines, the Birmans took up the cause of the Laos, and before a soldier had planted a standard in the country the Chinese invaders were either annihilated or made prisoners. So many mishaps have spread the vulgar belief that the land of the Free Laos can never be conquered, because some dreadful monsters guard the avenues to it.

The principal sources of our information about this country are the accounts of Chinese merchants, of which Du Halde in his work on China has preserved one. The annals of the country have for years been in the possession of Europeans, but we have never seen a translation. They resemble the Siamese annals, but are difficult to understand. The laws resemble those of the Siamese in many respects, but are more simple. The romances are deficient in rhythm, but superior in detail when compared with the Siamese. Ritter has quoted all the European authors who have written on this country; but their descriptions are very imperfect, and even the names of the principal states are in many instances omitted. The Tunkinese have also given some vague accounts of this territory. There exists a dictionary of this language in manuscript, and likewise a preparatory version of the New Testament. The language is very simple, and strongly marked by the system of intonation.

XI.—*Frontiers of China towards Birmah.* By DR. GUTZLAFF.
(Communicated by Sir George Staunton.)

[Read December 11, 1848.]

THE south-west of Yunnan received its civilization simultaneously with the remaining northern Laos states. Amongst the aborigines there existed a certain community of interests which kept their northern enemies long at bay. Mention is made of their early kings, of battles fought, and of conquests obtained, a few traces of which may be found in the Laos legends. The dominion of their kings during the great troubles in China, until the Tang princes reduced the empire to order, comprised at one time the greater part of Yunnan, and enabled their ruler to carry his arms into Tunkin.

The subjects of the southern potentate consisted partly of Chinese, but the greater number were of Laos extraction.

Until the destruction of the Sung family the natives retained their independence. Before, however, the last scion of that race lost his life, the mighty conqueror Kublai swept through Yunnan, and on the Bamoo road traversed the frontiers in 1272. Marco Polo appears to have been in the train of this prince, and is the only European who, from personal knowledge, has written upon the topography of this unknown country.

Though the inhabitants for a while were kept in awe, and even prevailed upon to send small presents of gold from their mountains to the Mongul camp, they soon learned to despise an enemy whose numbers were gradually being thinned under the effects of a destructive climate. To the Ming princes they sent but a nominal tribute, and, like their brethren in the East, requested that their hereditary chiefs should be confirmed by the Chinese authorities. Although considered as incorporated with China, they retain their own laws, and a Chinese officer is seldom seen within their territory.

We left off in our description of the free Laos states at the south-western extremity, where the Leën river flows, and shall now proceed due north along the borders of Koshanpri and of Birmah.

From the Man-loo river to the Lan-tsang (a considerable rapid stream, that falls into the Kew-lung farther south) there extends a very wild region for about 60 miles, intersected by the Lung-keang or Dragon river. Stupendous mountains covered with eternal snow extend here from east to west. Some of the valleys are difficult of access even to the hardy mountaineers themselves, who, with the agility of the chamois, leap from rock to rock, unmindful of the precipices below

them. The population is scanty, and the more remote tribes live in a savage state; but along the valleys of the above rivers the population becomes more dense. The communities are, however, so small, and obey so many masters, that the tract has yet received no general name. The climate is too subject to sudden changes and too rigorous to encourage here the production of many plants; medicinal herbs are however abundant, and wild animals of every description are frequent.

Quite different is the state of the territory included between the Lan-tsang river to the west, and the Nan-ting to the east. This whole tract constitutes one large fertile valley, where a dense and wealthy agricultural population covers the well irrigated soil. The T'ing principality is small, whilst the K'ang-ma, one of the largest governed by the Laos chiefs, extends far to the east. The inhabitants are orderly, emulating the Chinese in their industry and the care with which they cultivate their fields.

Scarcely, however, is the Nan-ting passed, when nature again appears in all the wildness of mountain scenery. Proceeding 40 or 50 miles more eastwardly, we meet with the first Chinese settlement of Chin-k'ang.

We have now arrived at the banks of the Loo-keang, which is even here a very considerable stream. If the accounts of Chinese geographers be correct, it takes its rise in Kokonor, the land of springs and fountains, in the 32nd degree of N. lat., and receives many other rivers before it reaches the Birman frontier. It is there known under the name of 'I hau-leuen, and having traversed that country through its whole length, it falls, known as the river Saluen, below the town of Martaban into the sea. Already in the Laos territory it is a broad and deep stream, not inferior to the Kew-lung in size, and navigable by rafts and long boats. In Yunnan it likewise forms a stream of some importance, and is navigated by native boats. After having passed through Koshanpri its character entirely changes, and it becomes a sluggish stream, full of banks and shallows. The tide runs up 100 English miles, and vessels of small draught may ascend about 70. It skirts throughout the whole course a ridge of mountains, extending from Yunnan and ending in about the 8° 20' lat. A great part of the course of the river lies through a frightful wilderness, and scenes of natural grandeur scarcely equalled in any part of Asia. The mountains, covered with trees of immense height, give to its banks a dark and sombre hue, and the underwood affords shelter to the royal tiger and other beasts of prey. On entering Yunnan the valley of the river widens, and affords room for human habitations, and even here and there a town.

The first place on approaching the Laos territory is Yung-chong, a town rendered noted by late tragical events. The greater part of the inhabitants, especially in the Paou-shan district, are Mohammedans, who, having offended some other sects in the neighbourhood, the latter laid siege to the villages of the former, burnt a number of their houses, and exacted a heavy ransom for their lives. The impunity with which this was done encouraged the victors subsequently to a repetition of similar outrages. They again invaded their territory, and, to justify their proceedings, gave out that the Mohammedans were in a state of rebellion. This assertion was supported by Chinese troops, who appeared to put down the supposed insurrection. Instead, however, of investigating the matter, the commanding officer promised a perfect amnesty, if the Mohammedans would surrender their arms. This having been done, the soldiers penetrated during the night into the city, and murdered nearly ten thousand of the inhabitants. Many families fled to the Birmah territory, and others died of starvation in the mountains. The Chinese commander reported that he had gained a splendid victory, and was in consequence raised to high honours. All the officers were recompensed for their efforts in quelling the rebellion. Subsequently to this destruction of life and property in this formerly flourishing region, an intelligent Mohammedan proceeded, in 1847, directly to Peking, there giving a true statement of the course of events, when the Emperor immediately ordered an investigation to take place, which will very likely result to the advantage of the sufferers, and ensure this persecuted sect the re-possession of their former property.

From the Loo-keang the Chinese Laos frontier extends two degrees west, through a richly watered country abounding in verdant fields, and a large population. Through this territory alone the communication with the peninsula is practicable, for in all other parts the mountain ranges present impenetrable obstacles. Immediately to the north of the Loo-keang we find the Chay-fang territory, a small fertile spot, washed on the north by the Che river, one of the feeders of the Lung-chuen: the latter empties itself, in the Birmah territory at Katha, into the Irawaddy, and is a considerable stream, having, before leaving the Chinese frontier, received the Kang-wan river. Between these two there is a small state called Maow, containing many extensive valleys, the population of which is wholly agricultural.

We have then to traverse the Sa-sa state, having in the north the Haé-pih river, which falls, at the celebrated city Bamoo, into the Irawaddy. This country is towards the west

hilly, but exhibits in the opposite direction a long plain, through which passes the great thoroughfare towards the south.

We now come to those regions unknown even to Chinese traders, and which are entirely under native chiefs, who acknowledge no authority but their own, and defy the whole power of the mandarins. These tribes are, without doubt, of Tartar origin, having nothing in common with the Laos, either in religion or language.

The Laos state most to the north is Chantat, a country richly watered by the Chin-tung-to, the Tā-ho, and the Pin-lung-ho or Betelnut rivers, which, running north, fall into the Hae-pih. In the 26th degree of N. lat. the habitations of the Laos cease, and wilder tribes, resembling the Tibetans, occupy the mountains of the country. Although Birman maps extend their dominion to the 27th degree of lat., and over three to four degrees of longitude (95°-99°), this portion may truly be called a debateable ground. Even the Chinese government has never asserted any right over this people, and the mandarins know them only by the name of Kew or Noo.

Farther westward we again meet a land of rivers and of fertile valleys. The Mun-tsoo river flows in a southerly direction, the Lo-tsoo, more to the west, runs nearly parallel, and both uniting near the frontiers form the Chō-to-mūh-tsoo river, which besides receives a branch from the west—the Chā-tsoo. Along the banks of each river run chains of mountains. Nothing is known concerning the course of this river after entering the debateable ground of the Birmah territory, but it is supposed to be one of the principal feeders of the Irawaddy.

The course of the Pō-tsang-poo and of the Ya-lo-tsang-poo (Tsan-poo), both of which enter the western extremity of the Birmah frontier, is equally unknown. Both are large rivers, the former flowing south receives in Tibet many tributary streams, while the latter runs south-east, and, on reaching the frontier, south. These rivers form perhaps by their junction the Shan-la-wade, or the Kia-yu-dua-pu of the Birmans, which is the principal tributary of the Irawaddy. To suppose for a moment that they are lost in the Birman country would be in defiance of reason, and the sources of the Irawaddy have been traced about 50 miles north of a principal Borkhamti village, in the 27° 30', N.E. of the Brahmaputra. Here we must leave the subject until the frightful mountains of Tibet and Kokonor have been traversed, and the course of the rivers more scientifically investigated.

The inhabitants of this part of the country belong to the mixed population of Kokonor, represented to be the descendants of the Monguls. and quite a different race from the

Laos. They are brave and fond of war, but superstitious believers in Lamanism. Under this scourge they honour their spiritual guides as the incarnation of Budha, obey them in all things, and consider no sacrifice too great to satisfy their desires or conciliate their good will. The most absurd laws enacted at L'hassa are here considered sacred. The Chinese government, well aware of the impossibility of conquering this country by means of physical force, has made superstition the engine for obtaining power, and homage to Budha and implicit obedience to Chinese power have become here identical.

Considering the fertility of the valleys, the agriculture of these tribes is at a very low point, and much excellent land is uncultivated. The dresses of the people are homespun and made of the coarsest materials; but the richer classes indulge in Chinese silk, and the clergy make use of the best safron-coloured satins. While the houses of the inhabitants are mere hovels, the monasteries and pagodas are carefully built.

Of the Birman frontier our knowledge is very scanty. The eastern part is the best inhabited and cultivated, but the people are subject to grinding oppression on the part of the Birman government. Many of these Laos visit the fair at Rangoon, though forty days' distant, with the productions of their country. They export lac, varnish, ground-nuts, lead, gold and silver in ingots. Iron is found in large quantities. The Laos have lately opened an intercourse with Martaban, and will probably, on finding security of person and property, come to that market in greater numbers for the manufactures of Europe.

The most celebrated place to the south-west of Yun-nan is Bamoo, the grand emporium between Birmah and China. It lies in lat. $24^{\circ} 9'$, long. $96^{\circ} 45'$, on the Irawaddy, at its junction with the Haé-pih. The inhabitants are principally Laos, but the principal merchants are Chinese, with an intermixture of Birmans. Cotton, ivory, betel-nut, birds' nests, &c., form the principal imports into China, in exchange for manufactured goods, teas, paper, &c. Hundreds of merchants from Yun-nan assemble at this place, and many visit even Amerapoorra towards the arrival of the caravan. Cotton is the great article of demand. The Chinese bring their goods over the mountains on ponies. The communication seems to be easy, and the risks of a long land transportation comparatively trifling. This route is the only practicable one into China in this quarter, and was known to the Monguls at a very early period. Keënlung, a successful monarch of the last century, heard with envy of the treasures of the far south. Victorious in the north-west, he had subjugated the sturdy Turkomans

and Eluths, and naturally concluded that the feeble natives of Birmah would not be able to resist his invincible forces.

The cabinet at Peking waited but an opportunity to commence the war, and one soon offered. A Chinese merchant, by the erection of a bridge, roused the suspicions of the Birman authorities, who accused him of evil designs, and deprived him of a great part of his property. He applied to his government for redress, and received the assurance that he should be satisfied to the utmost of his wishes, although the government of China as a rule pay no attention to the claims of native merchants upon foreigners beyond their frontiers. When, viz. in the last century, thousands of Chinese were murdered by the Dutch at Batavia, the only remark made was, "that Government could not interfere in behalf of men who had abandoned the graves of their ancestors." On a similar occasion, when several hundred Chinese, in 1833, engaged in cultivating tea in Java, were said to have been surrounded and cut down by the Dutch, no notice whatever was taken of this matter, although it was animadverted upon in the strongest terms by the people in the neighbourhood of Macao. In the Birmah case, however, the silver-mines (the value of which had been much over-rated) acted as a great inducement for interference.

The case of the above-mentioned merchant was still pending, when a Chinese caravan, in a quarrel with the natives, lost one of its number. They asked for redress, and hush-money was offered them according to Birman custom, but refused, and a Chinese army appeared on the northern banks of the Haé-pih to support the demand for redress. Several Laos chiefs who had fled from Birman oppression were in the Chinese camp, and tendered their allegiance to the Celestial Empire. Bamoo was delivered up to the invaders without a blow, and the army having crossed the river, the governor of Kaung-toun (no doubt a Shan) went over to the enemy in 1765, but the city itself held out.

Instead now of boldly advancing into the country, the Chinese troops halted before this town, while their General, Yin, sent a boastful account of his victory to Peking, thus affording time to Shin-bu-yen, the warlike monarch of Birmah, to dispatch a considerable army to the defence of the frontiers. Erê, however, the Birman army could reach its destination, the Chinese force had been already thinned by the desertion of the Laos auxiliaries, by disease, and by hunger. Having sustained but one attack from the Birmans, the Chinese retreated, and only a small remnant succeeded in reaching the banks of the Kew-lung.

But Keënlung was a prince of a firm determination. Aware that the Birmans, in 1767, engaged in a war with Siam, were besieging the capital of that country, he ordered an experienced general again to march upon Bamoo with an immense army, whilst another corps traversed the frontiers to the north, near the Tsanta river. But a large reinforcement was sent by the Birmans up the Irawaddy to the relief of Kaung-toun, a second time besieged by the Chinese. Akwei, the general-in-chief of the latter, was considered the greatest of the Chinese commanders. Assisted by several Laos princes, he penetrated far into the country, until at length the army became entangled in the jungle, and suffered extreme hardships. Epidemic diseases made their appearance in the camp, and thousands were carried off, whilst the Birman forces, being constantly recruited, grew bolder every day. A most disastrous retreat then followed, and the whole road and forests, through which the Chinese retired, were covered with the dying and the dead. Under such circumstances the chiefs of the Chinese (amongst whom was an imperial prince) made proposals for peace. This was agreed to in December, 1769, and they were permitted to retreat with the remains of the army. The ancient frontiers were thus retained, the former relations re-established, and the Laos tribes returned to the Birman sway. In 1787 a Chinese embassy arrived in Birmah, and both countries recommenced their former political intercourse. The ambitious hopes entertained by Keënlung of laying a firm foundation of his power in the south, and of extending his dominions to Hindostan, were thus finally frustrated.

APPENDIX.

No. 1.

Memoir on the Western or Edoor Tribes, inhabiting the Somali Coast of N.-E. Africa, with the Southern branches of the family of Darrood, resident on the banks of the Webbe Shebeyli, commonly called the River Webbe.* By Lieut. C. J. CRUTTENDEN, Indian Navy, Assistant Political Agent at Aden. Dated Aden, 12th May, 1848. (Communicated by Sir Charles Malcolm.)

[Read Nov. 13, 1848.]

DURING the time that I was employed at the wreck of the East India Company's steam-frigate Memnon, at Ras Assair, on the N.E. coast of Africa, I employed myself in obtaining what information I could, relative to the tribes on the coast, which I had the honour to forward to Government on my return. As, however, I have since that time had further opportunities of visiting the different branches of the Somali tribes, I now beg to offer a few remarks in addition, relative chiefly to those tribes inhabiting the African coast westward from Burnt Island, and distinguished among the windward tribes as the "Edoor."

From Ras Hafoon on the eastern coast to Zeyla, the country is known by the name of the Bur e Somal; and it is divided between two great nations, who both tracing their origin from the Arab province of Hadramaut, are yet at bitter and endless feud with each other. The principal of these two great families is that to the eastward, or windward of Burnt Island. The other extends from Burnt Island or Bunder Jedid to Zeyla, and is divided into three great tribes, namely, the Haber Gerhajis, the Haber Awal, and the Haber el Jahleh (Haber meaning the sons of), who were the children of Isaakh by three wives—the said Isaakh having crossed over from Hadramaut some time after his countrymen had founded the nation to the eastward, and settled at the town of Meyet near Burnt Island, where his tomb exists to this day. The eldest branch, the Haber Gerhajis, was put in possession of the frontier mountains of Kooleis and Woohur to the southward, and the other two brothers were placed on either side of them:—the Haber Awal establishing themselves on the low lands from Berbera to Zeyla and the Haber el Jahleh locating themselves

* For the Map of the Somali country *vide* the last volume of this Journal.—Ed.

at Kurrum, Enterad, Unkor, and Heis, four small ports to the eastward of Berbera.

The tract of country thus subdued, yet remains in the hands of the posterity of Isaakh. The Galla tribes of the Esa Somal, and Gidr Beersi to the westward, professed the faith of Islam and were permitted to retain their possessions. Of these tribes, the Gidr Beersi limit the Haber Awal to the westward, and are bounded by the Esa Somal, a very numerous horde, nominal Mohammedans, extending as far as Hurrur to the S.S.W., and to the borders of the Weema and Dunkali country to the westward. The remaining Galla tribes either became mixed up with their semi-Arab conquerors, or were driven across the Webbe river. I ought to say, one of the Webbe rivers, for there appear to be three or four, though the principal branch, and that to which I allude, is doubtless the Shebeyli, a river* taking its rise in the province of Guragi, and which, making a considerable curve to the N. and E., finally loses itself in the sand below Mukdesha, not far from the sea.

Meanwhile the nation to the eastward had not been idle. The Mijjerthaine and Ahl Oor Singally secured the whole seaboard from Hafoon to Bunder Jedid. The Dulbahantah established themselves on the prairie land south of the lofty range of the Oor Singally mountains. The tribe of Murreyhan took possession of the country of Nogal, abounding in myrrh of the finest quality, whilst the Ahl Ogahden, Girrhi and Burtirri, occupied the country to the westward until they reached to the south of Berbera. The southern boundary of the four last-named tribes of Darrood was the river Webbe or Shebeyli, which thus defines the Somali country from near Mukdesha on the eastern coast, to twelve days' journey S.S.W. from Zeyla.

I have been assured by many of the Gidr Beersi that in the mountains forming the southern barrier of their country there are many wonderful ruins of stone and chunam, the work of former ages, and abounding in inscriptions which no one can read. However tempting this description may appear, it must be received "cum grano," for after a careful search along the coast from Cape Assair to Zeyla, I have not succeeded in finding any remains of antiquity, save the aqueduct at Berbera, elsewhere mentioned in this memoir, nor is it likely that an illiterate savage would be able to distinguish an inscription from an ornamental border on a stone. It is, however, to be hoped that an opportunity will be afforded of examining this very

* Called by Lieut. Christopher the Haines's River. I am assured by many of the Somalis who have traded beyond Hurrur, that the three rivers, the Jub, or Webbe Ganneh, the Shebeyli, and the Hawash, all take their rise in the mountains of Bugama.

interesting country. Interesting it must be for many reasons; the possibility of inscriptions—the extensive coffee districts—the probability of the more northerly rivers, that reach the sea, either flowing close round or taking their rise in the mountains—and the certainty that no European foot has hitherto traversed this part of the country.

In February last year, a feud between two tribes near Berbera induced one—the Aial Yunus—to settle inland from a small roadstead called Bou'l Harr. Here a few traders joined them, and having left their women with the old men and children at the encampment inland, the men descended to the beach, to carry on their trade; whilst thus employed, and unsuspecting of any danger, a foraging party or “*Ghuzoo*” of about 2500 Esa Somals attacked the camp inland and put every one to the sword; men, women, and children were indiscriminately massacred. The Aial Yunus, paralysed by this catastrophe, were fain to send for assistance to their brethren at Berbera, and marching shortly after inland, met with a fresh body of the Esa, preparing to make a second descent, of whom they slew above 650 men.

The city of Hurrur, in the province of that name, though hardly in the Somali country, is closely connected with it by its commerce, especially by its slave-trade. Mr. M'Queen, in his valuable ‘*Geographical Survey of Africa*,’ places it, in my opinion, too far to the southward and westward. It is 8 days’ journey for a *kafila* of camels from Zeyla to Hurrur, and 9 days’ from Berbera, and this would place it in about latitude $9^{\circ} 22'$ N. and longitude $42^{\circ} 35'$ E.

A tradition exists amongst the people of Hurrur, that the prosperity of their city depends upon the exclusion of all strangers not of the Moslem faith, and Christians are especially interdicted. From what I have been able to gather, the traveller would hardly be repaid the risk and fatigue that he would have to undergo, and if he travelled as an European, he would be exposed to much insult and ill-feeling from the bigoted ruler and inhabitants of the place, who, sunk in the lowest ignorance, still plume themselves upon their superior sanctity, as followers of the true faith.

The government, founded in all probability during the reign of Sulciman the Magnificent, when the Turks held possession of Aden, is hereditary, and held by an Emir, all of whose male relatives, as was formerly the case in Shôa, are closely imprisoned, as a guard against domestic treachery. The Emir’s house is perpetually surrounded with guards, and no one dares to pass the gate of the court-yard mounted, or at a walk. He must cover his face and run. The Emir’s guard is composed of

perhaps 60 matchlock-men, and he has also a body of native spearmen in his pay; a few rusty old iron guns lying *outside* the walls, with their muzzles pointed towards the Galla country, are quite sufficient to keep these unruly savages from entering the city, but the flocks and herds are frequently carried off close to the walls. The city is described as larger than Mokha, and situated in a fertile country, but is fast decaying. Though many large and well-built houses of mud and stone are still to be found, the majority of the people live in huts made of mats and reeds, with a thorn fence round them. There are five gates to the town, the whole of which are locked nightly with the most jealous care, and the keys carried to the Emir's house, a precaution which, seeing that about 20 yards of the wall are knocked down, appears rather excessive. The "Ashraffi," stamped at the Hurrur mint, is a coin peculiar to the place. It is of silver and is in value the 22nd part of a dollar. The only specimen that I have been able to procure bore the date of 910 of the Hegira, with the name of the Emir on one side, and on its reverse "La Illahi il Ullah."

The coffee districts are described as lying amongst a low range of mountains near Hurrur, and to the southward. The quantity exported is very large, and the quality fully equal to that commonly sold as Mokha. Besides coffee, Hurrur exports white cotton-cloths, used as dresses by the wealthier classes. They are known by the name of "Tobe Hurruri," and consist of a double length of 11 cubits by 2 in breadth. They have a deep border of various colours, of which some are very good, especially the scarlet.* The cotton of which they are made is grown at Hurrur, and the price of a really good dress is from five to eight dollars: on the windward coast, one of these dresses is considered a handsome present for a chief, and I have been offered a horse in exchange for one of moderate quality. A few silk Loonges are also manufactured at Hurrur, and I was assured that the silk is brought from the countries south of Shôa: cardamoms, gum-mastic, myrrh, a small quantity of manna, saffron, and safflower, with the articles above mentioned, comprise the extent of the Hurrur trade, so far as regards produce; but the most valuable branch of commerce is the export of slaves from Guragi and Habeska.

The duties levied at Hurrur are 10 per cent. on import and export, and a further tax of 6 pounds of brass or $2\frac{1}{2}$ dollars is laid on slaves of both sexes. The country in the vicinity is described as well watered and fertile, and between the city and the port of Zeyla the traveller crosses six small mountain-

* The Hurrur cloth is considered fully equal to that manufactured in Shôa.

streams flowing to the south-east, viz., Nahr Nugush, Nahr Shuktheyeh, Nahr Subbiti, Nahr Shefer Annan, Nahr Billoo, Nahr Hamer.

Zeyla, the sea-port of Hurrur, but under the dominion of the Sheriff of Mokha for the time being, is a miserable mud-walled town, containing some 12 to 15 stone houses, 180 huts, and 750 souls. It is situated on a low sandy point, nearly level with the sea, and its nearest well of drinkable water lies at a distance of 7 miles. A vessel of 250 tons cannot approach within a mile of the town, and the anchorage is shallow and difficult of entrance after sunset, on account of several reefs. Zeyla, no doubt, originally was intended to serve as a sea-port for Hurrur, for of itself it appears to be worth little. There are no remains of antiquity to be found either in the town or neighbourhood, and I should not assign an earlier date to the settlement than A.D. 1500, or shortly after the occupation of Yemen by the Turks.

The kingdom of the Imâm, like most other native principalities, having fallen into decay, the town is now under the authority of the Sheriff of Mokha, who has the power of displacing the governor, should he think fit, but who yet receives no part of the revenue;—this is farmed out, and the present chief, Hadj Shermakhi Ali Saleh, pays annually to Synd Mahomed el Bhor at Mokha the sum of 750 German crowns, and reserves all that he can collect above that sum for himself.

Zeyla levies a tax of one dollar upon each slave exported from Tajoura, or imported from Hurrur, and afterwards sold at Berbera. Formerly Zeyla obtained but three-quarters of a dollar per head, the Sultan of Tajoura receiving the remainder; but this has of late fallen into disuse.

With reference to the slave-trade, the position of Zeyla is important. It is the sea-port of Hurrur, and it commands Tajoura and Berbera, the only available places of export: and when the time arrives for the final suppression of the slave-trade on the north-eastern coast of Africa, the numerous advantages held out by Zeyla will be duly appreciated. Hurrur depends for its foreign supplies solely on Berbera and Zeyla, and were these two ports cut off from the merchants, so far as regards the sale of slaves, it must prove a death-blow to the slave-commerce through that province from Abyssinia and Guragi. Berbera once forbidden, Tajoura is the only remaining outlet, and that outlet, thanks to the marauding habits of the Esa Somal and others, is much more frequently closed than open.

The Haber Awal, as I have before stated, occupied the lowlands between Berbera and Zeyla, a fertile tract of coun-

try with several low ranges of hills, and averaging perhaps 40 miles in depth, to 90 in length. The number of sheep, goats, she-camels, &c., found on these plains, is perfectly incredible, fully realizing the account given of the flocks and herds of the patriarchs of old, for many of the elders of these tribes own each more than 1500 she-camels, and their sheep are innumerable; asses are very numerous, and most admirably adapted to the country. The camels are small and weak, and are never used for riding, except in a case of sickness or a wound. The Haber Awal have no chief. The customs of their forefathers are the laws of the country, and appear to be based upon the simple principle that might gives right. Theft is punishable with the loss of the right hand, and fortunate it is for the Haber Awal, that this is not insisted upon, for they are the most inveterate thieves that I ever found on the coast. They wear the "Reesh" or ostrich feather after slaying a man, but speak with abhorrence of the Esa custom of mutilation after (and sometimes before) death.

That Berbera has existed as a port of great trade for several centuries, I conceive to be almost sufficiently proved by the fact of its being an annual rendezvous for so many nations, and from the time for this great meeting having been chosen so as to suit the set of the Red Sea and Indian monsoons. But, with the exception of an aqueduct of stone and chunam, some nine miles in length, Berbera exhibits no proofs of antiquity; and the extraordinary remains of buildings, castles, reservoirs, &c., still found at Aden, Hisn Ghirab, and Nukab el Hajar, have no place on the sandy shores of North-East Africa.

The annual fair is one of the most interesting sights on the coast, if only from the fact of so many different and distant tribes being drawn together for a short time, to be again scattered in all directions. Before the Towers of Berbera were built, the place, from April to the early part of October, was utterly deserted, not even a fisherman being found there; but no sooner did the season change, than the inland tribes commenced moving down towards the coast, and preparing their huts for their expected visitors. Small craft from the ports of Yemen, anxious to have an opportunity of purchasing before vessels from the Gulf could arrive, hastened across; followed, about a fortnight to three weeks later, by their larger brethren from Muscat, Soor, and Ras el Khyma, and the valuably freighted bugalas from Bahrein, Bussorah, and Graen. Lastly, the fat and wealthy Banian traders from Porebunder, Mandavie, and Bombay rolled across in their clumsy kotias, and, with a formidable row of empty ghee-jars slung over the

quarters of their vessels, elbowed themselves into a prominent position in the front tier of craft in the harbour, and, by their superior capital, cunning, and influence, soon distanced all competitors.

During the height of the fair, Berbera is a perfect Babel in confusion, as in languages; no chief is acknowledged, and the customs of bygone years are the laws of the place. Disputes between the inland tribes daily arise, and are settled by the spear and dagger, the combatants retiring to the beach at a short distance from the town, in order that they may not disturb the trade. Long strings of camels are arriving and departing day and night, escorted generally by women alone, until at a distance from the town; or an occasional group of dusky and travel-worn children marks the arrival of the slave-kafila from Hurrur and Efât.

At Berbera the Guragi and Hurrur slave-merchant meets his correspondent from Bussorah, Baghdad, or Bunder Abbas; and the savage Gidr Beersi, with his head tastefully ornamented with a scarlet sheepskin in lieu of a wig, is seen peacefully bartering his ostrich-feathers and gums with the smooth-spoken Banian from Porebunder, who, prudently living on board his ark, and locking up his puggree, which would infallibly be knocked off the instant he was seen wearing it, exhibits but a small portion of his wares at a time, under a miserable mat-shed on the beach.

By the end of March the fair is nearly at a close, and craft of all kinds, deeply laden, and sailing generally in parties of three or four, commence their homeward journey. The Soori boats are generally the last to leave, and by the first week in April Berbera is again deserted, nothing being left to mark the site of a town lately containing 20,000 inhabitants, beyond bones of slaughtered camels and sheep, and the frame-work of a few huts carefully piled on the beach in readiness for the ensuing year. Beasts of prey now take the opportunity to approach the sea. Lions are commonly seen at the town-well during the hot weather; and in April last year, but a week after the fair had ended, I observed three ostriches quietly walking on the beach.

The great drawback to Berbera as a port is the scarcity of good water—that in the two wells belonging to the town being brackish; and the wealthier portion of the merchants are therefore compelled to send to Seyareh, a small harbour 18 miles to the eastward, for a supply. I had frequently been told by the Somalis at Berbera that the remains of an ancient aqueduct were still to be seen; and, taking advantage of an unavoidable detention at that port, I visited the ruins, and

satisfied myself that in former times water had been conveyed to the port by an aqueduct of nearly nine miles in length.

At the distance of half a mile from the beach I found the remains of a small building, apparently a mosque; and close to it a shallow reservoir, built of stone and chunam, having a channel leading into it of about 20 inches in diameter, and 12 in depth. I opened this channel in two or three places, and found it of an uniform size and structure. At about seven yards from the reservoir it was lost for some distance, but by walking in the direction of the nearest range of hills, known as Dthubar, slabs of limestone and fragments of chunam served to show the general course of the aqueduct; and at about a mile from the hill of Dthubar it was again found entire for several yards. The cement used was as hard as the stone itself, and, as usual in all ancient remains in this part of the world, mixed with large pebbles. Many graves were observed in the neighbourhood, and the stones of the aqueduct had been used to form the tombs.

Half a mile from these remains I arrived at a swamp, having at the upper end a spring of water, which showed a temperature of 107° Fahrenheit, whilst the thermometer in the open air stood at 76° . The water was slightly bitter, and in quality highly astringent.

The remains of a small fort or tower of chunam and stone were found on the hill-side immediately over the spring. In style it was different to any houses now found on the Somali coast. It would not contain more than ten or twelve men, and, I imagine, must have been intended as a kind of guard-house over the spring. On a hill to the N.E. of this, several small houses were found, each having a semicircular niche on the north side, similar to the prayer-niche of the Mussulmans; but these again were built of loose stones, and I have seen others like them on the coast to the eastward of Berbera. Crossing the shoulder of the hill, another spring was found, apparently of rather better quality than the former, and which was the nightly resort of the wild ass, the ostrich, and other animals, numbers of which were seen on the plains.

In the neighbourhood of the fort above mentioned abundance of broken glass and pottery was found, from which I infer that it was a place of considerable antiquity; but, though diligent search was made, no traces of inscriptions could be discovered.

The hill immediately over the spring is of moderate height, and of limestone formation, having many shells imbedded. Gypsum is found in large quantities, and, from its unusual hardness, I imagine that it has been used as cement for the

aqueduct. There is no doubt but that the water from this spring was carried down by this channel to the town, inasmuch as no other water could be found at the termination of the ruins. The nearest part of the aqueduct yet remaining is fully one-third of a mile from the swamp, and at a higher level. I am not certain if the spring is likewise below the level of the ruins, but no traces of chunam or of any channel could be found near it. The nation, however, who could construct an aqueduct of so great a magnitude, would not find much difficulty in raising water to a higher level. The fact of the aqueduct being thus established, it remains now to discover what nation could have constructed, and at what time the commerce of Berbera was sufficiently important to warrant so costly an undertaking.

In the size of its channel, and in its mode of construction, the Berbera aqueduct is similar to that near Aden, excepting that in the former case stone is used, and in the latter brick.

During a short journey in 1847, I found the country inland from the hill of Dthubar consisting of low and undulating limestone ranges, thickly covered with tamarisk and acacia trees, and on the sides of the hills with the gum-arabic. At the distance of 2 hours from Dthubar I reached the pass of "Gudh Harrirch," in which is to be seen a large cave, said to have been in former times the residence of the Galla chief Harrirch, who was expelled from the country by the descendants of Isaakh. The rock at this part is an exceedingly pure white limestone, and would be invaluable in Aden, were it not for the expense of carriage. In the valley, close to the pass, red granite, porphyry, white marble, and large fragments of gypsum are common. It is worthy of remark that the gum-arabic tree at Berbera differs in every way from that exported from the windward coast, the leaf and the tree both being smaller and of a different shape. The plain beyond this valley, extending 1 hour's journey S.S.W., is infested with lions, hyenas, and leopards: and it is considered unsafe for a single individual to cross it at night.

At the southern extremity of this plain I reached the valley of Dunanjer, a steep ravine, having in its bed a few pools of very bad and stinking water, almost unfit for man to drink, but which, nevertheless, proved most acceptable to us after a hot and fatiguing march. Passing over several low ranges of limestone, through which in many places red granite had been thrust, I reached another watercourse, having very steep banks of 30 to 40 feet high, thickly wooded and having a most picturesque appearance. The bed of the watercourse was of soft white sand, in any part of which water was procurable by

scooping a hole a foot in depth. On the range of mountains between Dunanjer and this valley I observed many large blocks of very pure white marble, with an abundance of obsidian, gypsum, and large masses of basalt. The geological formation of the country appeared to be entirely without order, and led to the idea that by some extraordinary convulsion of nature rocks of all kinds had been thrown together in one large confused heap. A huge natural cairn might be observed 30 to 40 feet high, composed of six or seven different species of stone—a block of marble lying over or under an equally large boulder of red granite, and flanked, perhaps, by a fragment of conglomerate or black basalt.

This valley is much infested with lions, leopards, &c., and the traces of elephants were numerous. The diameter of the lion's foot was $5\frac{1}{2}$ inches, and of the elephant, after several measurements, 22 inches, which would give a height of upwards of 10 feet at the shoulders. This watercourse passes round the western flank of the Dunanjer range, and can be traced down to the sea, close to the town of Berbera: after heavy rains it discharges a large body of water into the bay.

From this valley my course lay over a rough and stony tract of country, in many places well wooded and watered, but, so far as regards formation, exhibiting if possible a still stranger appearance than the valley above mentioned. Thousands of ant-hills, rising like slender sandstone pillars, in many cases 14 feet high, were scattered in every direction, giving the country the appearance of an immense Turkish cemetery—many were hollowed out entirely, others were pierced with smaller channels longitudinally, and a current of hot air could be detected rushing through.

On first seeing these columns, I fancied that I had reached some ancient ruins, so numerous were they. In one instance I observed a huge block of marble, weighing many tons, having three or four of these sand pillars round it, and bearing the exact appearance of a tomb. On the brink of a cliff close by, an enormous rock of perhaps 18 or 20 feet in diameter, and diamond-shaped, stood exactly balanced on its point, and to all appearance required but a push to send it down into the ravine below. The number of graves found in every direction excited my surprise. They were well built and bore marks of great antiquity, but no inscriptions were found on them. Night closed in before we reached the plain of Shimberali, and we were glad to find an empty sheepfold to shelter us for the night, after a march of 17 hours on foot, of which 3 only could be spared for a halt during the greatest heat of the day.

Shimberali is part of an extensive plain, reaching from a

solitary hill called Deimoli to the southern mountain-range of Koolies, and Woohur, the frontier of the Haber Gerhajis tribe. It is inhabited by the Esa Moosee, a branch of the Haber Awal, who are looked upon by the elder branches of the tribe as a treacherous race, with whom it is advisable to keep on good terms, and who in their turn are at deadly feud with a branch of the Haber Gerhajis, residing on the mountains above them, and known as the Sulhehgiddeb.

The plain is tolerably well wooded in some parts. Several varieties of gum-trees are found. The mimosa, tamarisk, wild fig, and several species of the cactus and aloe, are abundant; and in the deep fissures and rents made in the plain by the fury of the mountain-torrents, a few date-trees are found. Elephants, lions, leopards, hyenas, wolves, and jackals are to be seen on the plain, and occasionally a troop of ostriches. Salt's white antelope, the "sagarro" of the Somali, the koodoo, the kevel or scimitar-horned antelope, and the oryx, were the varieties of the deer species observed; the small antelope or gazelle was very common. Jerboas and squirrels were numerous, and a species of toucan. The white vulture, of enormous size, and the common osprey, were the principal birds observed. In the hot season much inconvenience is occasioned by a species of hornet, the "dibber" of the Somali and the zinib (?) of Bruce, who justly styles them a curse. The same evil extends along the whole coast during the S.W. monsoon, where the slaughtering a sheep brings the hornets round in myriads, and very shortly compels the unlucky traveller to shift his position as fast as possible from the neighbourhood of his Somali butcher.

The hill of Deimoli is a lofty conical mountain, in many parts inaccessible. It is a great resort for beasts of prey, especially for lions, and is therefore avoided by the shepherds. It is apparently of limestone, and thickly wooded. At its base stands a smaller hill, bare and barren, and bearing a most extraordinary appearance, from its being indented in regular furrows by the action of the rain from top to bottom. On every side of Deimoli huge masses of rock lie piled on each other, and in many of these Nature appears to have indulged in the wildest vagaries. Several of these masses formed perfect funnels, and others exhibited a smooth round basin on their upper surface, capable of containing many hundred gallons of water.

From the top of Deimoli I was able to sketch the course of the valley and watercourse above mentioned. For some distance on the plain (200 to 300 yards) it exhibits a running stream—when it is lost in the sand for perhaps the same dis-

tance; and then re-appears as before. In almost every part of its bed water is procurable by digging a foot deep. Large bullrushes and tall wiry grass grow in rank luxuriance on its banks, affording a good retreat for the wild pig, one long-legged specimen of which was seen, and missed by me on my return. Snakes are reported to be numerous, but I saw none.

After a long and fruitless search after the elephants, a herd of which, seven in number, had passed a few hours before, and after spending the night in the bed of a dry mountain-torrent, I crossed over in a N.E. direction to examine another running stream, where I found excellent water falling down shelving limestone rock, forming pretty cascades, and collected into a tolerably large stone basin, the overflowings of which were lost in the sand. On my return to Dthubar I crossed over the Dunanjer range more to the eastward, and found them of the same formation as the hills I had observed on my way to Shimberari. The distance travelled over in this walk I compute at about 70 miles.

At a later period, accompanied by Commander C. D. Campbell, of the Indian navy, I left Dthubar, and after walking in a north-westerly direction, across a broad plain, covered with ostriches, oryxes, koodoos, and quaggas, but all of whom, save the latter, were too shy to admit our approaching within shot, we reached the bed of a broad watercourse, having in its centre a stream of perhaps 8 to 10 feet in breadth, which at the distance of a mile below is absorbed in the sand. The native tradition says that the stream runs only by night, and from this it takes its name "Bheeyeh Ghora," "Night running water." The actual increase in the distance, occasioned doubtless by the evaporation being so great during the day, we found, by measurement, to be 135 yards, but the stream had then dwindled down to a mere thread. The temperature of the stream at 7 A.M. was 69°, in the open air 71°. Following up the bed of this stream towards the hills, we observed in many spots the ground white with the efflorescence of nitre; the bitter taste of the water was thus accounted for. As we approached the narrow defile in the hills, through which the stream passed, pure salt was found adhering to the smooth sandstone rocks, generally encrusted on a dark-coloured vein from which water exuded, and shortly after we reached a powerful hot spring showing a temperature of 125°, the thermometer in the open air standing at 76°.

Above this hot spring, the valley became narrower, and from the sandstone and limestone sides of the ravine water was observed, at almost every yard, dropping and forming large and beautiful stalactites. But what was most singular,

though the rock throughout was the same, a hot spring of water would be found within a yard or two of another of cold water, and though the hot springs were disagreeable to the taste, the water obtained from those that were cold was sweet and good.

Fully a hundred of these springs exist in this valley, and the temperature of the main stream varied from 91° to 105° , the highest temperature found in any of the hot springs being 125° , and the water appearing to be strongly impregnated with iron.

A peculiar kind of creeper grows in great luxuriance in the neighbourhood of the springs, which everywhere ooze through the rocks. The dragon's-blood tree was observed on the hills above, and an ibis and a coney were seen, whilst a flock of large apes noisily resented our intrusion upon their retirement. The head of the stream, I was assured, was to be found in the mountain-range of Waghur, which I have since personally ascertained to be the fact. Near where the stream is lost in the sand, we found an extensive burial-ground, and the remains of several old buildings, of small dimensions and of no great antiquity. The distance of Bheeyeh Ghora from the sea is not great, perhaps six miles; and I have been assured by several respectable natives that on the sea-shore north of Bheeyeh Ghora, and at the spot where its waters are discharged into the ocean after heavy rains, the remains of an ancient reservoir and aqueduct are to be found, similar to that previously described as extending from Dthubar to Berbera.

It is worthy of remark that the majority of the streams running from the mountain-ranges of Waghur and Koolies are bitter, and in quality highly astringent. There are, however, others that afford most delicious and pure water, to be properly appreciated only after a seven years' residence at Aden. The country to the south is described as an inclined plain without hill or rock for seven days' journey; and on arrival at the province of Ogahden, we were told that stones sufficient to make a fire-place were not to be found, whilst the country was one immense prairie of some 20 days' extent.

The Haber Gerhajis, the eldest branch of the three tribes of Edoor, reside chiefly in the mountains to the south of Berbeta, whence they extend to the country of Ogahden. They are a powerful and warlike tribe, numbering many horses, in addition to their flocks and herds, and have a nominal sultaun, who possesses, however, but little influence or power over his savage subjects. From this branch of the family of Isaakh sprung the venerable saint Aber Khudle, whose tomb, southwest from Berbera two days' journey, is yet the rendezvous,

when any grave question arises affecting the interests of the Edoor tribes in general. On a paper yet carefully preserved in the tomb, and bearing the sign-manual of Belat, the slave of one of the early Khaleefehs, fresh oaths of lasting friendship and fresh alliances are made, to be broken again, as usual, without a shadow of provocation. In the season of 1846 this holy relic was brought to Berbera in charge of the Haber Gerhajis, and on it the rival tribes of Aial Ahmed and Aial Yunus swore to bury all animosity, and live as brethren in future—with how much sincerity, the events of the two succeeding seasons amply show, some scores of lives having been lost on both sides.

In the country of the Haber Gerhajis the principal articles of trade or produce are—ghee, myrrh, in small quantities and of quality inferior to that produced in Ogahden and Murreyhan, luban of the first quality, ivory, ostrich feathers, and gum-arabic, with a small quantity of “sheima” or orchilla weed, and a still smaller supply of “warus,” a kind of saffron, used by the natives in Yemen to rub over their bodies.

The kafilas from the banks of the “Webbe” Shebeyli, from the small province of Gananeh to the south of the above river, and from Ogahden, pass through the country of the Haber Gerhajis on their way to Berbera. Excepting the slave-kafila from Abyssinia, these are the most valuable caravans of the season, bringing ivory from the Galla tribes of Sidama, south of the Webbe Gananeh, ostrich feathers, myrrh, and frankincense. They frequently exceed 2000 camels in number, and are well guarded by the men of Ogahden, who may always be recognised amidst the crowd at Berbera, by the red colour of their robes, produced, as they all declare, by the fine red dust peculiar to their country.

From Gananeh to Berbera is 24 days for a kafila. From the Webbe Shebeyli 19 days, and from Ogahden 9 days. I consider the journey fully practicable for a European, if at all known to the Somali tribes on the coast, and in the more distant province of Ogahden, his reception would be kind, and his person and property safe. In the map of N.E. Africa* appended to this memoir, will be seen the position of the different tribes north of the Webbe Shebeyli, and my idea of the course of that river from Zeyla down to below Mukdesha. My information has been obtained from many natives of different tribes, and by comparing one with the other, no very serious error can arise in a journey of 20 days, since the country, after the first ranges are surmounted, presents a level for several days.

Amongst the Edoor tribes, as with the descendants of Dar-

* *Vide Map of Somali coast, in the last volume — Eo.*

rood, there exists a class of men who never carry the spear and shield, but whose sole arms are the bow and poisoned arrow. With a couple of arrows in his mouth, and half a dozen more dangling from his long tangled hair, the "Rahnu" is feared alike by man and beast, and in all forays is looked upon as an invaluable ally. Inferior in caste, and not ranking with the gentle blood of the Somali aristocracy, the "Rahnu" approaches in every respect to the freedman of the Roman. They are expert and daring hunters, crippling the elephant by a blow on the back sinew with a heavy knife,* and attacking even the stately African lion with no better arms than the tiny, though unerring, "nishab" or arrow.

The tree from which the poison is made, I found in the mountains of the Ahl-Oor Singally, and at Aden I had a small quantity of poison prepared by a cunning Rahnu, in my own house. Its effects on an animal are instantaneously fatal, and I have been repeatedly assured that on a human being the poison has equal power, causing the hair and nails to drop off, and the sufferer to die in less than half an hour. The only cure is immediate excision of the part wounded, and the number of ghastly scars visible on the bodies of the Somalis amply testify to the dread in which the poisoned barb of the arrow is held amongst them.

This poison I imagine to be the same as that described by Major Sir W. Cornwallis Harris, in his work on South Africa, when speaking of the arms of "Burhman," except that amongst the Rahnus the juice of the euphorbium is not made use of.

The last branch of the Western tribes is the Haber el Jahleh, who possess the sea-ports from Seyareh to the ruined village of Rukudah, and as far as the town of Heis. Of these towns, Kurrum is the most important, from its possessing a tolerable harbour, and from its being the nearest point from Aden, the course to which place is N.N.W., consequently the wind is fair, and the boats laden with sheep for the Aden market pass but one night at sea, whilst those from Berbera are generally three. What greatly enhances the value of Kurrum however is its proximity to the country of the Dulbahanta, who approach within four days of Kurrum, and who therefore naturally have their chief trade through that port. The Ahl Yusuf, a branch of the Haber el Jahleh, at present hold possession of Kurrum, and between them and the tribes to windward there exists a most bitter and irreconcilable feud, the consequence of sundry murders perpetrated about five

* This was seen by Commander Campbell and myself, when inland from Berbera, and Bruce again has spoken only the truth.

years since at Kurrum, and which hitherto have not been avenged.

The small ports of Enterad, Unkor, Heis, and Rukudah are not worthy of mention, with the exception of the first named place, which has a trade with Aden in sheep; and, leaving the Haber el Jahleh at Heis, therefore, it remains but to notice the ancient settlement of Meyet, the burial-place of the founder of the Edoor nation, and their present limit to the eastward. Meyet is situated on a small plain bounded on the south and south-west by the western extreme of the lofty mountains of the Ahl Oor Singally, which here approach within two hours of the sea. From Meyet a large quantity of white ebony is exported, as also a long and thin rafter used both at Aden and on the coast, in the construction of native houses. The hills immediately over the town afford a large supply of very fine gums, and the place carries on a considerable trade with both Aden and Maculla.

The stranger is at once struck with the magnitude of the burial-ground at Meyet, which extends for fully a mile each way. Attachment to the memory of their forefather Isaakh yet induces many aged men of the western tribes to pass the close of their lives at Meyet, in order that their tombs may be found near that of their chief, and this will account for the unusual size of this cemetery. Many of the graves have head-stones of madreporé, on which is cut in relief the name of the tenant below, and of these many are to be found 250 years old.

In my notice of the western tribes, I have made use of the word Edoor to distinguish the descendants of Isaakh from those of his fellow-countryman Darrood, but it may be as well to observe that the western tribes are averse to the appellation, and invariably correct the person who styles them Edoor, by telling him that the Edoor are the Galla tribes. The Mijjerthaine told me that the Galla family into which Sheikh Isaakh married was called "Durr," and from that is derived the name of "Edoor;" and the Haber Gerhajis, on the other hand, retaliate by quoting "Darrood" as an offshoot from the same Pagan source.

I found it impossible to obtain any estimate of the number of their tribes, but the population in the interior is doubtless very great. The advantage almost universally taken of the liberal allowance of wives sanctioned by the Prophet, and the prolific nature of the Somali females, are strong arguments to that effect, but it would be idle to attempt to put down any fixed number for the population of this part of N.E. Africa, and I much doubt, if all the tribes were computed

separately, from report, whether we should even then obtain an approximate estimate of the truth.

To the South and S.S.W. of Berbera, on the road to Hurrur, the kafilas pass through the country of the Burtirrihi, and Girrihi, the two most western branches of the family of Darrood. Of these two tribes little is known. The Emirs of Hurrur have for many years intermarried with the Burtirrihi, and this gives them a certain degree of influence, but they do not visit the sea-coast so commonly as the other tribes, and appear to be a pastoral race, occupied solely in tending their flocks and herds, and in planting the coffee-tree on the low ranges S.E. of Hurrur.

They are bordered on the S.E. and E. by the province of Ogahden, a country of considerable extent, bounded on the S. by the Webbe and on the E. by Murreyhan. From Berbera to Ogahden is nine days, of which I am assured that four are without water. The fertile valley of the Nogal passes Ogahden on its northern side, and throughout the province generally the ground is cultivated, and a large quantity of white Jowari is grown, forming the common food of the people.

Ogahden is stated to be a level country, possessing excellent pasturage for cattle, with abundance of water, which is procured by digging wells 6 to 8 feet in depth. The soil is remarkable for its redness, but the purity of the air is highly extolled. From the number of their flocks and herds, the inhabitants, as might be expected, export large quantities of ghee from Berbera, and carry on a regular trade with the Galla tribes to the southward of the Webbe Shebeyli, through the intervention of the people resident at Gananeh, who act as brokers on the occasion. The goods carried down for barter are white and blue cloth, cowries and beads, on which last an enormous profit is realised. The gums are purchased by the skin of 60 lbs., ostrich feathers by the pound, and ivory by the frasila of 20 lbs., if of large quality and good of its kind.

The Galla tribes are described as a nation to be trusted if once an acquaintance is formed. They appear to understand cultivation of the soil, and produce immense quantities of jowari, which is retailed at a cheap rate on the east coast of Africa, at the ports of Mukdesha Juba, Patta, Lamoo, &c. and thence exported to Hadramaut. Bruce mentions the river Webbe Gananeh, or Jub, as the Yas, or Webbe; and, as an additional instance of his general veracity as a traveller, I may mention that on my inquiring about this name from the Somali who recently had returned from the river, he told me that it was

occasionally termed so from the stream being full of yahass, or alligators, rendering its navigation on a raft highly dangerous. From the word "Yahass" Bruce doubtless derives his name. It is now well known that Webbe in the Somali language means a river, whilst Kebbei or Kibbee signifies the bed of a river in which pools of water are found. After a long search after it, I found by accident that the river Durdur, said to exist four days inland from Burnt Island, meant in the language of the country a running stream, but no river; and doubtless, as our acquaintance with this part of the country increases, we shall find that the confusion now existing relative to the Webbe will be satisfactorily cleared up, and the number of rivers laid down in Mr. M'Queen's map reduced to two only—the Jub or the Webbe Gananeh, and its northern brother the Webbe Shebeyli, the three smaller streams running between them not being worthy of mention.

Ogahden is governed by a chief who takes the title of Oghass, but who, like all other Somali chiefs, can boast of little save the name. Horses are described as being abundant and very cheap; camels equally so. The country, from all accounts, is safe, and the climate healthy: and a journey through Ogahden down to Gananeh, or down the Wady Nogal, would amply repay the traveller. Amongst the families of Darrood, Ogahden ranks as second, but in numerical strength and extent of country it would probably take the first place.

Of Murreyhan but little is known, bordering as it does on the Haweea tribe, who are a different caste of people to the Somalis; they are not looked upon with much consideration, but their country must abound in gums, myrrh, and ivory. The valley of the Nogal borders upon them, and they are separated from the sea by a belt of country occupied by the tribe of the Haweea; the Somali and the Seedee of the coast of Suwahhil.

Murreyhan cultivates no grain, and is separated from the Shebeyli river by Haweea again. Kafilas from this province annually arrive at Berbera, bringing the best of myrrh, and the finest ostrich feathers and ivory. Their breed of horses is highly esteemed: and I believe that a traveller might penetrate the country with ease, provided he took the precaution of being passed from tribe to tribe, a measure indispensable amongst the Arabs, and highly desirable amongst the more savage inhabitants of N.E. Africa.

Between Murreyhan and the country of the Ahl Oor Singally the great pasture-ranges of the Dulbahanta, a level country abounding in grass, water, and timber, and without a stone. Unlike their other brethren, the Dulbahanta are a nation who

fight chiefly on horseback, their arms being two spears and a shield. Their horses are powerful and courageous; the breed descended, according to Somali tradition, from the stud of Suleiman, the son of David, and consequently is highly valued. The Dulbahanta, as far as I have seen of them, are a fine martial race of men, second to none of the branches of Darrood either in conduct or appearance, and they are described as being courteous and hospitable to the stranger who visits them. They have generally two Sultauns, or Gerads; the elder of whom, Mohammed Ali Harran, governs the eastern limits of the province, whilst his colleague, Ali Gerad, recently deceased, guards the N.W. frontier from the thieving Haber el Jahleh in the neighbourhood of Kurrum and from the Ogahden family of Noh Ahmar.

The Dulbahanta have no grain whatever, and subsist chiefly on milk, save when want of rain renders it necessary to thin the countless flocks and herds that roam over their boundless prairies. They have but few gums, but they bring down ivory, ostrich feathers, and ghee in abundance. Wild beasts are numerous, the lion especially so. The cameleopard is found on the grassy plains bending down to the southward from the stupendous mountain-chain of the Jebel Ahl Oor Singally; and the koodoo, the oryx, and the black rhinoceros are also common in the same neighbourhood.

North of the Dulbahanta the country, for so great a distance level, begins to rise gradually. The grassy plains become more rocky, small limestone ranges are passed, until at last the level plateau of the Jebel Ahl Oor Singally is attained: when the traveller, from the dizzy brink of Eyransid (the Cloud-bearer) looks down a sheer precipice of 1500 to 2000 feet, and sees the villages of the Ahl Oor Singally dotted along the sandy sea-coast 6500 feet below him.

This magnificent range, so aptly named, and rising in solemn grandeur about 25 miles from the sea, had long been looked at from a distance by me; and a visit to the Gerad, or chief, of the Ahl Oor Singally, in February, 1848, afforded me the opportunity, so long coveted, of visiting them. Between Mohamed Ali Gerad and myself frequent friendly letters and messages had passed by means of the boats that touched at his ports on their way to Aden; and during this my first interview with him, he appeared anxious to get "his name written in the books of the English," as his Mijjerthaine brothers had done. An assurance that I might go anywhere I pleased over his country, was caught at on my part with a readiness that appeared rather to alarm him; but seeing that my tent and travelling kit was already on its way to the shore, he appa-

rently thought it useless to argue the matter or magnify the perils of the road. By the following afternoon we had left the town of Ras Goree, and, taking a small guard of elders from his own tribe, we bid his Majesty an affectionate farewell, and turned our steps in the direction of the lofty barrier range of Eyransid.

An hour's sharp walking took us some distance up the bed of a watercourse, having a general southerly direction, and the night was passed in a small clearing under the cliff. At sunrise the march was resumed, and, passing some three to four miles up the same watercourse, in which we observed several large monkeys and some remarkably fine antelopes, we crossed a low shoulder, covered with gum-trees, amongst which we found the myrrh, and had an opportunity of collecting a small portion of its gum. It was the same tree as that sent down by me to Bombay some years ago, and the only one, as I was assured, affording the myrrh of commerce. Entering the bed of the mountain-torrent a second time, we observed the broad-leaved luban-tree (Meyti), the Wadi and Adadi species of the gum-arabic, and large specimens of the Harraz, or baubul-tree. The sides of the watercourse were regularly-disposed strata of fine and coarse gravel interspersed with huge boulders of limestone. Fragments of porphyry were frequently picked up, and small quantities of pure white marble. Shortly before nine we reached a pool of water in the bed of the mountain-torrent, which had a decidedly bitter taste, similar to that before described at Bheych Ghora. The temperature was pleasant, not exceeding 81° under a tent at 11 A.M. The general direction of the watercourse during this march was N. and S. By three in the afternoon we were once more on our way. The ascent became very steep, and we now came upon large fragments of ironstone interspersed with lava and black basalt, small masses of red ochre were common, as also hardened clay; and the frankincense-tree now began to be very abundant. A most fatiguing ascent of two hours exhausted man and beast; and, too tired to trouble ourselves about the tent, we lay down on the mountain side, and, with the thermometer at 65° , and the clouds rolling round us, we were soon drenched to the skin with the dew.

The hour for morning prayer found us packed up and on our road. For three hours we crossed over undulating hills, every mile rapidly increasing the elevation. The dragon's-blood tree now appeared in abundance, and, from my former experience amongst the Mijjerthaine, I was not surprised to find that its value was unknown in the Or Singally country. The "bo-chain" of Socotra, a peculiar tree found also in Aden, but I

believe possessing no generic name, was seen on every side ; and another extraordinary specimen, like a gigantic bulb of 3 to 4 feet in diameter, with a few small sprouts, not worthy of the name of branches, springing from its top, attracted our attention. At an estimated height of 4000 feet we halted during the heat of the day, with the thermometer 76° at noon. The country now began to assume the general character of a limestone range. The watercourse that we had left the day previous was to be seen winding its way into the ravines of the high range, and here and there a cluster of white limestone slabs pointed out the site of an ancient graveyard.

At 3 P.M. the ascent was resumed. The country became more thickly wooded and more beautiful as we advanced. The track of the rhinoceros warned us to have our rifles in readiness, and before sunset we pitched in a small level spot of ground about 1000 feet below the Peak of Eyransid. A stream of delicious water was found within half a mile of the tent, the only drawback upon which was that it abounded in small leeches, which rendered it necessary to be cautious in drinking without due examination. The tree from the root of which is made the poison for the Somali arrow, was here pointed out to us, and I have now with me a piece of it. Here, as in other places, extensive burial-grounds were observed, but owing to the long drought the people had retired to the mountains farther inland, and had we not taken the precaution of driving a few sheep with us from the sea, we should have been on very short commons indeed.

Sunday morning afforded us a rest, but in the afternoon we pushed on for an hour, passing on our road many places where the track of the rhinoceros was recent. The cactus appears to be the favourite food of this animal, for we found many trees torn down and half eaten also. A beautiful red flower, too delicate to preserve, was here first observed. Specimens of red ochre, and fossil shells filled with the same, were to be picked up at every step, and the gum-arabic had now replaced the luban or frankincense-tree. Before sunset we halted on a plain immediately below the summit of the mountains, and were honoured with the presence of the sister of Mahomed Ali Gerád, who, in company with a relation, was travelling to her home in the Wady Nogál. The night was bitterly cold, the thermometer showing a temperature of 48°, and the dew falling like soft rain. An occasional howl from the jungle warned us that leopards were to be found in the neighbourhood, and kept our Somali conductors on the *qui vive*, and we were not sorry to recommence our journey at sunrise.

Sending the tent round by a more practicable road, we

scaled the almost perpendicular cliff rising some 750 feet above us, and by eight o'clock found ourselves on the summit of Eyransid, 6500 feet above the sea, and the first Europeans that had ever placed foot on the soil.

To describe the grandeur of the prospect before us is impossible. Range after range lay stretched like a map at our feet, and the view was bounded only by the ocean. The towns of Ras Goree and Gahm were to be seen dotted on the glaring sandy shore, and the Euphrates brig-of-war lay like a speck on the water. At noon the thermometer stood at 64° , and the scud driving past and below us, warned us to prepare for a cold night. As the afternoon advanced, the clouds packed heavy and thick below us, and the rocket and blue-light fired to notify our safety to our friends on board, were consequently not seen at the ship.

To our surprise the temperature during the night was not so low as on the plain 800 feet beneath us; the thermometer standing at 52° . Warm clothing was, however, indispensable; and our Somali guards peevishly remarked, that though we were always wishing for cold weather, we did not appear inclined to benefit by it, judging from the blankets, &c. that we were glad to creep under: as they had but a single cotton-cloth themselves, some little excuse might be made for them; and a venerable old ram, purchased the next morning from a passing Dulbahanta Somali, restored them to their good humour. We spent the following day in wandering over the level plateau forming the summit of the range. The wild fig, 25 to 30 feet in height, was thinly scattered along the ridge. The dragon's-blood was observed 26 inches in diameter and 18 feet in height. The ebony-tree was plentiful, but of small size; a tree similar to, and possibly the *lignumvitæ*, attracted our notice; and cedar-trees, some of them 24 inches in diameter and 25 feet high, were common. In cutting the cedar we observed that the wood which appeared to be growing had no scent, and was nearly white; whilst the more aged branches, that apparently bore no leaf, were of a very deep colour, and had a very strong perfume. The wood is neither prized nor used by the Somalis.

Various and very beautiful wild flowers were scattered over the plain. The aloe was abundant and of good quality; but not used or known by the people. Many species of euphorbium and milk-bushes were seen, but no frankincense or gum-arabic.

The summit of the range is composed of tabular masses of limestone, covered with small nodules, and very cellular, thereby rendering walking most uncomfortable from the sharp-

ness of the rock. At one point that we visited, a most magnificent natural wonder presented itself to us—a column of rock, perhaps 50 feet square, had by some convulsion of nature been separated from the mountain side, and stood alone, a mighty pillar of 1500 feet in height, with hardly a break or irregularity in its sides, so straight had been the fracture. Trees and the grass of years remained on its summit untouched; the intervening 50 feet forming an impassable gulf, and at its foot deep caverns went in far beneath the parent mountain, through whose windings a stone thrown down from above could be heard to reverberate long after it had passed from sight.

A second night of cloud and fog prevented again our communication with the brig by rocket or blue-light, but the “seraj” or light of the English will long be held in remembrance by the Ahl Oor Singally, who could not sufficiently admire the one or the other. You are the kings of this world in wisdom, said the solemn Mahamonood Abdi, “And what are we in comparison! Thank heaven, our world is to come!”

After a two days’ stay in this delightful climate, we commenced the descent by the former route, intending to spend a day at the water 1000 feet below, and examine the frankincense trees in the neighbourhood. Scrambling down the rock, we passed many beautiful aloe-trees of 20 feet in height, having several branches and bearing a beautiful scarlet bell-flower of the size and shape of the fox-glove. The aloe plant (the Socotra species) observed on the summit bore a yellow flower and of a different shape altogether. The camels that had been sent round, as before, joined us with the melancholy tale of two of our sheep having been wounded by a leopard on their way down, and their having been obliged to cut their throats in consequence. Time unfortunately was too valuable to be lost, and we were compelled, though very unwillingly, to leave the culprit unpunished.

We halted at the water under the shade of some gigantic fig-trees, laced together by an enormous creeper of some hundred feet in length, and probably the caoutchouc-tree. Rock partridges were here found, but no animals, save Salt’s white antelope, and hungry hyenas, who during the night made a meal of one of our water-skins. The frankincense found on the rocks over this spring was of the large leaf kind, known by the name of meyeti, and not much prized; but, independently of gum-arabic and frankincense, there were many other gum-trees, for which I could find no name. Of these, one, a specimen of which I brought to Aden, is, I feel sure, gum-clemi; and another variety was shown to us, the gum from which was

used by the Somalis to cleanse the hair. To a botanist these mountains would afford an inexhaustible field for research, and it is much to be hoped that the Flora of the Somali coast may ere long be described in the manner that its beautiful varieties deserve.

On our return to Ras Goree, the chief town of the Ahl Oor Singally, we found that our unaccountable proceedings in the mountain-range had excited much alarm. Amongst the wonderful stories, our having found the gold-tree was confidently asserted; and it was significantly remarked that the English, by carrying away stones and trees from Aden when they surveyed the harbour, were enabled to capture the place afterwards with ease. Fearful however, apparently, of giving offence, the chief refrained from questioning us, and allowed us to repair on board, without the slightest demur at the prices or presents that we thought sufficient recompense for his trouble.

The country of the Oor Singally may be described as a lofty plateau of limestone mountains, precipitous to the north, and gradually sloping to the south. Between the mountains and the sea undulating ranges occur, intersected by ravines, and thickly wooded; whilst the belt of level ground near the sea is thinly sprinkled with bushes, and exhibiting a plain of white sand. The Oor Singally country extends from Bunder Zeeahdeh to Bunder Jedid.

The tribe is powerful and warlike. Brothers of the *Mijjerthaine* by the same mother, they generally coalesce should war break out; but petty feuds and plunder are of frequent occurrence.

The Oor Singally* are divided into several clans, of whom the following are the most important:—1st, Gerad Abdullah, the royal branch, from which the title of Gerad or chief descends by hereditary right. They reside on the sloping southern side of the great mountain-range of Eyransid, or the "Cloud-bearer." 2nd, the Noh Ahmar, who are found at Bunder Jedid. 3rd, Ogeiss Lubbah, to whom belong two out of the three villages of Ras Goree. 4th, Aden Seyd, at the village of Gahm, and the mountains above. 5th, Mayedth, resident at Door Deree. And, lastly, the numerous clan of Dubeiss, who occupy the towns of Elayeh, and extend to Bunder Zeeahdeh, where they join the *Mijjerthaine*.

The Oor Singally have numbers of horses, and of a good breed. With the exception of the tribe of Dubeiss, the arms used by them are the two spears and shield. The Dubeiss

* "Bringer of good news,"

are nearly 5000 strong, and fight with the bow and poisoned arrow alone. It is worthy of remark that in this tribe theft is looked upon with abhorrence; and though, in the event of a wreck, the natives would doubtless consider it fair to plunder, still during my stay amongst them, though many a tempting opportunity of pilfering occurred, not an article was lost. To call a man a thief is a deadly insult, to be washed out by blood alone. Pity it is that the Somali tribes of the Edoor have not the same prejudice in favour of honesty.

It is a mistake to suppose that the high ranges produce the best frankincense. As before stated, we found no luban-trees on the summit of Eyransid, though at the elevation of 2000 to 3000 feet they were abundant. The traveller in crossing the Somali country generally is struck with the appearance of boundary-lines dividing the hills into portions. These landmarks have existed probably for centuries, and serve to denote the limits of each family's gum-trees. In the Oor Singally tribes we were assured that the gum-trees were never planted, but that they increased in course of nature. In the Mijjerthaine country we observed several young trees that had been transplanted, and we were then told that in some districts the trees were regularly cultivated like the coffee, and, naturally, the produce was increased seven-fold.

Frankincense, myrrh, sumuk or gum arabic, shenneh (orchil), and ghee, form the export of this tribe; and a peculiar kind of gum, called "felleh-felleh." I could not find the tree producing this gum, and I can hardly fancy, from the specimens in my possession, that it is the Persian fulay-fulah, the fruit of the aloe-tree, as Richardson gives it in his Dictionary. It is imported into Aden in large quantities from the coast, but the merchants cannot tell me the use made of it.

The graves found in the Somali country generally, and especially amongst the tribes of the Ahl Oor Singally, are remarkable for their neatness. They are built of white slabs of limestone, almost marble, and surrounded by a circle of stones, the space within being neatly gravelled; but at Bunder Gorce, in the Mijjerthaine territory, and in the neighbourhood of Berbera, very ancient graves are found, consisting of a heap of stones, frequently 7 to 8 feet in height, and 15 to 18 feet in diameter at the base, hollowed in the centre, and with no headstone, similar in all respects to those described by Mr. Richardson in his travels in the great desert of the Sahara. They are, I fancy, relics of the Galla tribes, who once resided on the coast, but we could obtain no information regarding them.

To a traveller wishing to ascend the mountain-ranges of the Jebel Ahl Oor Singally, I should recommend the small port of Doordece, to the eastward of Ras Gorce, as the best starting-

point. The mountain-spurs there approach nearer the sea, and there is not the same scarcity of water. Moreover that part of the mountain-district called Minneh, on which the people throughout the year keep immense herds of horned cattle, lies in his way. I do not anticipate any difficulty being thrown in the way by the chiefs, nor would the journey be very expensive; whilst the bracing climate, pure air, and magnificent scenery must prove most advantageous to an invalid.

The Mijjerthaine tribe has already been described by me in a Memoir forwarded to Government in 1843; and, on looking over my notes, I do not find it requisite to make any alteration, excepting in one or two minor points. The luban meyeti is there described as being the most valuable species of frankincense, which I have since ascertained not to be the case. And again, where the Mijjerthaine tribe is spoken of as inferior to the western Somalis.—a few years' more experience has proved to me that the Mijjerthaine and Ahl Oor Singally tribes are unmeasurably superior to those of the Edoor; and, though given to plunder a wreck (a fault sometimes found in England), they will not rob the stranger of his own private property, and life is safe amongst them. With this very brief tribute to the manly character of the Mijjerthaine, I will now pass on to Ras Hafoon, the southern extreme of my wanderings on the Somali coast.

Ras Hafoon, or "The Surrounded," is in the Mijjerthaine territory, and tenanted by the Aial Fatha branch of the family of Othman. It consists of a nearly square headland of 600 to 700 feet in height, formed of sandstone and limestone. The outer edge of the peninsula is perfectly flat and tabular, and the interior consists of undulating hills deeply intersected by ravines and the courses of mountain torrents. It is connected with the mainland by a long narrow neck of white sand, shells, and mud, with a few stunted bushes thinly scattered along it; and from its being thus almost an island, I imagine it takes its name Hafoon.

The southern bay is of course best adapted for ships during the strength of the N.E. monsoon, but a change of two or three points in the direction of the wind to the eastward causes a swell to roll in, and a surf to break on the beach. On our arrival there we found a few miserable Somali huts, and a population of perhaps 50 people, who offered ivory, ostrich feathers, ambergris, and fish-teeth for sale. The bay is much frequented by the shark-fishers from the Arabian coast, many of whom reside here throughout the year, merely moving their fishing craft to the other side of the isthmus as the monsoon changes.

A walk of seven or eight miles brought us to the N.W. point

of the cape, whence we embarked in a very crazy boat for the mainland. The bay when we crossed was too shallow for anything but very small vessels, and I feel confident that a ship would not be able to ride in safety throughout the S.W. monsoon, owing to the heavy swell that must roll round the point and the violent gusts of wind blowing across the headland. This northern bay, or Khore Hardeah, I should imagine to be the most unhealthy spot on the Somali coast. Its shores, and the bottom of the bay, are covered with decomposed vegetable matter, which on being disturbed gives forth a noxious gas that is perfectly sickening, and in which the unfortunate traveller who longs for a bath sinks leg deep; and yet we found many fishermen living on the sea-shore, who from long habit had become accustomed to these exhalations, and wished for no better place.

We pursued our way for about nine miles to the lagoon of Hundah, passing over a flat country composed almost entirely of coral and limestone, and evidently at one time covered by the sea. At Hundah, to our great disappointment, we found the lagoon salt-water, except at its head, where it was barely drinkable; a well of good water was however found a few yards higher up, which shortly was crowded by the flocks and herds from the wooded plains inland of us. Our very uncommon appearance, the tent and our baggage, occasioned unbounded astonishment to the natives, who poured in on every side, but no incivility was offered, and no article of our baggage was missing when we prepared to start on the following day.

Milk was brought to us in abundance which was paid for in blue cotton cloth, and sheep were equally attainable. Hafoon, however, like the whole Somali coast during the early part of 1848, was suffering from long-continued drought, which had occasioned much misery amongst them.

During the time that the French surveying-vessels were anchored in the southern bay in 1846, their crews cleared out one of the few wells found there, and thus procured a supply of good water. The other wells were brackish and bitter, and had become deteriorated by constant use.

In the northern bay, or Khore Hardeah, we found no water at all, but at the bottom of the bay, at a place called Khor Hashera, we were told that a stream of water ran into the sea. It is possible that the river mentioned in old writers as existing in the neighbourhood of Hafoon may be this stream, and Khor Hashera the ancient Opone.

During the S.W. monsoon, a kind of fair, similar to that at Berbera, though much smaller, is annually observed at Khore Hardeah. The merchants from Maculla, Shahr, and from the Mijjerthaine Bunders to the northward and westward, attend

this meeting about the end of May, when their bugulas are hauled up on the beach, and a brisk trade is carried on throughout the S.W. monsoon, in gums, ostrich feathers, hides, ivory, and ghee. Large quantities of ambergris are also brought for sale, and the price demanded is very great. Elephant hunting is followed by those who have guns; and last year upwards of 35 were killed by a party of gun-men brought by a speculating Somali from Brava on the coast. A good trade might be carried on between Mauritius and Hafoon in asses. These could be procured at Hafoon in great numbers for five to six dollars each, and I should imagine, consequently, that the speculation would answer well, especially as the voyage would be so short in the N.E. monsoon.

2.—*Remarks on the Course of the Hurricane which occurred on the Malabar Coast, in April, 1847; and on the probable position of the Steam-Frigate Cleopatra at the time.* By Captain T. G. CARLESS, I.N. (Communicated by the Hon. the Court of Directors of the East India Company.)

[Read Jan. 8th. 1849.]

THE following attempt to trace the course of the hurricane which occurred on the Malabar coast in April, 1847, is drawn up from the information obtained from the log-books of the steam-frigate *Sesostris*, steam-vessel *Victoria*, and ships *Buckinghamshire*, *Mermaid*, *Faiz Rubany*, and *Atiel Rahumon*. The investigation furnishes another proof to those already afforded of the rotatory nature of these violent storms.

At noon on the 16th of April, it appears by the *Buckinghamshire's* log that she was in lat. $8^{\circ} 45' N.$, and long $73^{\circ} 3' E.$, with the wind blowing a hard gale from N.E. b. N., and a very high sea. The *Faiz Rubany* at the same time was in lat. $11^{\circ} 16' N.$, and long. $75^{\circ} 27'$, with the gale moderate from E.S.E.; and the *Atiel Rahumon* at anchor off Alipee, in lat. $9^{\circ} 25' N.$, had squally weather, with the wind varying from E. and E.S.E.

The data afforded by the direction of the wind at these points, although not so complete as could be wished, from the vessels being all in the upper half of the circle described by the hurricane, are still sufficient to enable us to ascertain the vortex, or centre round which it revolved with tolerable accuracy; and I am therefore induced, after an attentive consideration of the facts, to place it in lat. $8^{\circ} 3' N.$, and long. $74^{\circ} 5' E.$, at the spot marked A in the chart. My belief in the correctness of this position is confirmed by observing that

the Buckinghamshire, being nearest to it, experienced the gale strongest; and that as she advanced to the eastward the wind veered gradually round from N.E. b. N. to N. and W.N.W. That at the Faiz Rubany's position in the N.E. quarter of the circle, upon its outer extremity, the wind was less violent, and from E.S.E.; and that the weather was still more moderate, and the breeze variable from E. and S.E. at Alipee, where the Atiel Rahumon was at anchor, which, as she was somewhat nearer to the vortex than the Faiz Rubany, was probably owing to the interruption and disturbance caused in the course and strength of the gale by the high mountains in the vicinity. At this time the storm appears to have been revolving from right to left, looking to the northward, and this seems to have been the case throughout its duration. When the gale first reached the Faiz Rubany, and for several hours after, the Mermaid, about 90 miles from her, and standing from Mangalore to the southward, had moderate winds and fine weather, which was also the case with the Sesostris steam-frigate, then about 100 miles to the W.N.W. of the Cherbaniani bank; and, as they were entirely out of its influence, we can form some idea of the extent of space over which it prevailed, which a reference to the chart will show was a circle with a diameter of about 410 miles.

On the morning of the 17th, at 2 A.M., the gale first reached the Sesostris, Mermaid, and Victoria; and we have now more ample means of tracing its course and extent, as at that time the vessels were in different and opposite quarters of the circle. Their positions were as follows:—

Sesostris. Lat. $13^{\circ} 14'$ N., and Long. $72^{\circ} 2'$ E.; moderate gale from N.E. b. E.

Buckinghamshire. Lat. $9^{\circ} 5'$ N., and Long. $74^{\circ} 29'$; hard gale from W.S.W.

Mermaid. Lat. $12^{\circ} 12'$ N., and Long. $74^{\circ} 50'$ E.; fresh gale from S.E.

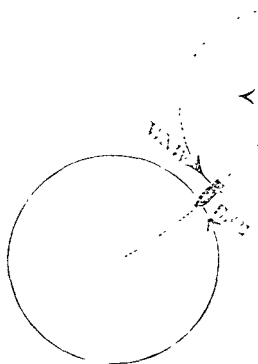
Faiz Rubany. Lat. $11^{\circ} 23'$ N., and Long. $75^{\circ} 35'$ E.; heavy gale from S.E. Close to her position at noon of the 16th, Victoria, at Cannanore, moderate gale from the E.S.E.

The direction of the wind at these different localities places the centre of the hurricane at this period near Underoot Island (marked B in the chart). The Faiz Rubany and Mermaid, nearest to it, experienced the worst weather; the latter, after lying-to a few hours under a close-reefed main-topsail, lost her main-topmast, and was obliged to cut away her mizen-mast, and bear up before it; and the former, after having her sails blown from the yards, her quarter-boats washed away, and heaving overboard a portion of her cargo, spars, &c., was obliged to follow her example.

The *Victoria* steam-vessel, although farther distant, also received considerable damage, and was under the necessity of throwing overboard some heavy cargo she had on deck. The *Buckinghamshire*, being at a greater distance from the vortex, received no injury; and, although the wind was blowing a hard gale, stood on her course under a press of sail. At the N.W. extremity of the circle the *Sesostris* had the gale more moderately; and on the S.E. side where the *Atiel Ruhomon* was at anchor, apparently a short distance outside it, the weather was merely squally and unsettled. From these facts it would appear that the storm-circle had contracted considerably in its progress and at this time did not exceed 300 miles in diameter.

Having thus ascertained the position of the centre of the hurricane at two different points, we are enabled to find its course, and estimate the rate at which it progressed. At noon on the 16th its centre, as before stated, was found to be at A in the plan; and at 2 A.M. on the 17th, fourteen hours after, at B; and as the distance between these two points is 180 miles, it had moved, in a N.W. direction, at the rate of 13 miles per hour.

At noon on the 18th, the *Buckinghamshire* was between Vingorla and Goa, about 30 miles from the land. Here the gale shifted suddenly, and blew most furiously from E.S.E.; in the course of an hour all her sails were blown from the yards, her quarter-boat blown away over the poop, and she lost all her masts. The violence and storming force of the wind is mentioned in her log-book as indescribable. At 2 P.M. it fell suddenly calm, which continued until 4 P.M., when "the wind, which had died away at E.S.E., commenced with equal violence at W.N.W." She had in fact run into the vortex of the hurricane, which moving upwards whilst she remained nearly stationary, caused the remarkable change of wind described above, as may be shown by the following diagram:—



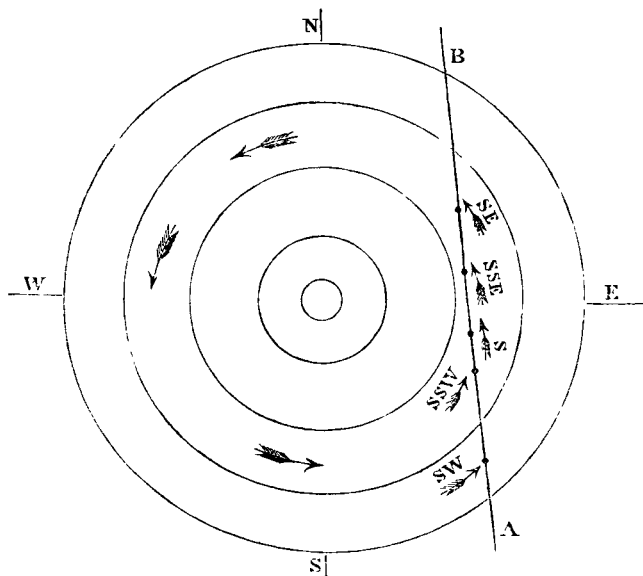
At this time the Mermaid was about 50 miles to the S.S.E., running up with a fresh gale from W.S.W., with only her foremast standing and 5 feet water in her hold. The Sesostriis, 150 miles to the S.W., was standing to the eastward, with a fresh breeze from N.W., being just without the limit of the hurricane circle; her position again enables us to judge of its extent, which had apparently contracted to still narrower limits, and now exhibited a diameter of only 225 miles. The distance from its centre at 2 A.M. on the 17th (B) to the spot where the Buckinghamshire was dismasted at noon on the 18th (C) is 263 miles; and it had moved through this portion of its course in nearly a N. $\frac{1}{2}$ W. line in 34 hours, at the rate of 8 miles per hour, and had also approached within 40 miles of the coast.

It is to be regretted that we have no means of ascertaining the track of the storm farther to the southward and eastward, and the direction from which it approached the continent of India. From what I have been able to glean from the imperfect information given by the native commander of the ketch Ceylon Island, I am induced to believe that it came from E.S.E.; for he states that on the 15th of April, when off Colombo, he had a gale from the S.E., in which he had all his sails blown away, lost his mizen-topmast, crossjack, yard, &c.; and that in standing to the N.W. it continued from that date veering gradually round to S.W., until the 21st, when it moderated. He further mentions that three days before—on the 12th—when about 25 miles from Colombo, he experienced a heavy gale from E.S.E., which obliged him to run before it for a whole day.

I shall now offer a few remarks on the course of some of the vessels.

At noon on the 16th, the Buckinghamshire was lying-to with the gale from N.E.b.N.; the vortex of the storm was then a short distance to the S.E., and moving at a rapid rate to the N., passed ahead of her shortly after she stood to the E.N.E. under a press of sail, and during the day the wind veered gradually round from N.E.b.N. to S.W. From noon of the 17th, her course was about W.N.W., and she was going at the rate of 12 knots per hour, with a current of nearly 2 knots in her favour. As she was thus moving up with the hurricane, in nearly the same direction, she remained the whole time in the S.E. quarter of the circle, and consequently had the wind steady from S.S.W., until noon of the 18th, when the line of her course meeting that of the hurricane, she had reached its vortex; the wind changed suddenly to E.S.E., and blew with tremendous violence, and she was quickly rendered a mere wreck.

The centre of the storm-circle passed near the *Mermaid* when she was lying-to, and, as might be expected, the weather she experienced was most tempestuous. By bearing up, she followed the hurricane on a course slightly inclining towards its path; but as it progressed with much greater velocity, her speed not exceeding 4 knots per hour, it soon left her path behind. She received, however, so much damage that after the gale had subsided she was found to be in a sinking state, and her commander was obliged to run her ashore near Vingorla, with only her foremast standing, and 9 feet water in her hold. During the time she was running before the gale, the wind veered, in 24 hours, from S.E. to S.W. by E., which is a proof that she was on the eastern side of the storm-circle, as the following diagram will show, the hurricane having moved over her in a N.b.W. direction from A to B :—

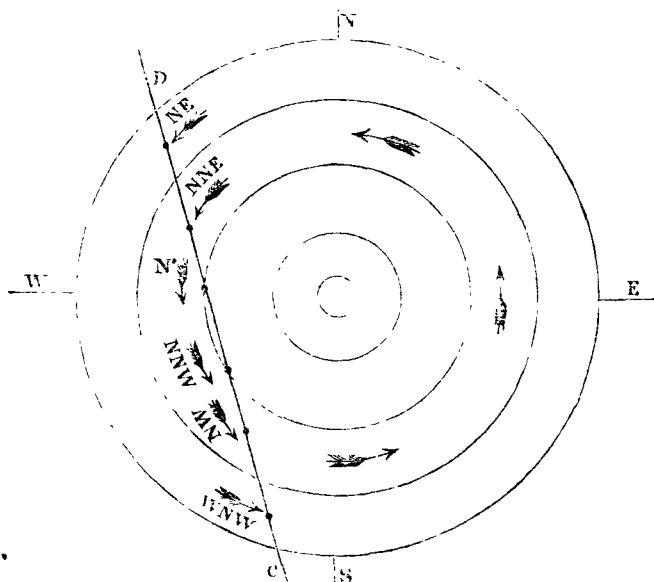


The *Faiz Rubany* being farther to the southward, and closer in-shore, was somewhat farther removed from the centre of the storm, and the gale therefore was not quite so violent with her as with the *Mermaid*; but as she also bore up and followed it, she continued exposed to its fury for a much longer period than would otherwise have been the case. Compared with the other two vessels, the damage she received was trifling.

The *Victoria* steam-vessel, after being forced to leave the

anchorage at Cannanore, kept close in-shore with her head to the southward, by which means, although she was driven 60 miles up the coast to Mangalore, she continued in a position outside that portion of the storm-circle in which the greatest violence of the hurricane, which also quickly passed her, was experienced; and in consequence, at the time it reached its greatest height farther to the northward, when the Buckinghamshire and Mermaid were dismasted, the wind had moderated where she was to a fresh breeze.

When the gale reached the *Sesostris* on the morning of the 17th, she was standing to the eastward, but a few hours after wore round, and steered N.W. She thus stood directly away from it, and although her course was again altered on the following day to the eastward, the hurricane had then passed above her, and she consequently met with much more moderate weather throughout than any of the other vessels. During the gale the wind veered round from N.E. to W.N.W. by the westward, which shows that she was in the western half of the storm-circle, as may be shown thus, the direction of its course being, as before, N.b.W. from C to D : *—



* I may here remark, that in standing up the coast after the gale, the *Sesostris* passed the wrecks of a great number of boats between Mangalore and Vingorla, and that the sea was covered with fragments.

From the above facts I think the following inferences may be drawn:—

1. That the storm was rotatory, and turned from right to left, looking towards the N.

2. That it pursued a course along the Malabar coast from the parallel of Cape Comorin to Vingorla, in a slightly curved line inclining towards the land, the general direction of which was about N. $\frac{3}{4}$ W.

3. That at the southern extremity of the coast it extended over a circle of about 400 miles diameter, which contracted gradually to a diameter of 225 miles as it moved to the northward.

4. That between Cape Comorin and Calicut it moved with an average velocity of 13 miles per hour, and from the latter place to Vingorla of 8 miles per hour.

5. That it increased in strength and moved with less velocity as it contracted, and that its greatest violence was experienced on the Malabar coast between Calicut and Vingorla, along a track about 150 miles in breadth.

6. That, as far as can be ascertained, it appears to have approached the continent of India from the E.S.E.

It would be highly interesting to trace the farther progress of this storm to the northward, for although its extreme violence appears to have been expended at or near Vingorla, there is some reason to believe that it still pursued its course along the land, and eventually reached the shores of Cutch. From the scanty information I have been able to obtain, the same rotatory movement of the atmosphere seems to have prevailed along the coast for several days after, but without that degree of intensity that would prove destructive, for I find that at Bombay the wind veered, about the 16th and 19th of April, from N.E. to S., and was accompanied on the 19th with considerable magnetic disturbance; and that on the 24th the Taptee surveying-vessel experienced a fresh gale on the Cutch coast, which veered round from S.S.E. to S.W., accompanied with a very threatening appearance to the S., and preceded several days by a heavy S.W. swell.

The log-books of the vessels do not supply much information relative to the variations in the barometer. In the Buckinghamshire's log the height of the barometer and sympiesometer is given at noon on the 15th, when the former was 29·67 and the latter 29·72. From that date no observation appears until 2 p.m. on the 18th, when she was in the vortex of the hurricane. The sympiesometer had then fallen to 28·80, and it appears to have remained at that height during the calm that succeeded, and until it had passed over her. At 6 A.M.

on the 17th, the Victoria's log shows the height of the barometer to have been 29·83. At midnight, when she was nearest the centre of the storm, it fell to 29·70; and at noon next day, when it had passed her, rose to 29·90. At midnight on the 16th the barometer on board the Mermaid was 29·84, and continued constantly falling until noon of the 18th, at the time she was nearest the vortex of the hurricane, when it stood at 29·34. Two hours after, it rose to 29·38, but no further observations are recorded.

During the extreme violence of the hurricane the quantity of electric matter in the atmosphere appears to have been very great. On the morning of the 17th the lightning darted incessantly close around the Sesostriis in intensely vivid flashes, and the rain poured down in torrents. The other vessels also experienced similar weather.

Probable Position of the Cleopatra Steam-frigate during the Hurricane.—The log-books of the vessels proceeding down the coast supply information of the state of the winds and weather previous to the hurricane, and a tolerably accurate judgment may therefore be formed of the position of the Cleopatra when she first encountered it. On the morning of the 16th of April the Faiz Rubany was below Cannanore, and had the wind strong from S.E. with a high sea. The Victoria steam-vessel, at noon of the same day, was between Mangalore and Mount Dolly, and had the wind fresh from the southward and S.E., with a heavy swell; and her speed was reduced to $4\frac{1}{2}$ knots, and after sunset to 3 knots per hour. On the morning of the 17th the Mermaid was off Mount Dolly under double-reefed topsails, the wind blowing from S.E., and at 8 A.M. was lying-to under a close-reefed main-topsail in a strong and rapidly increasing gale.

The Cleopatra left Bombay on the afternoon of the 14th, passing the outer light-vessel at 3 o'clock; and after making a sufficient offing, would naturally steer along the coast at a distance of 25 or 30 miles from it, so as to pass between the easternmost island of the Laccadive group and the main in mid-channel. With the assistance of her sails, I do not think her *average speed* could have exceeded $7\frac{1}{2}$ knots per hour, or that she had run more than 338 miles up to noon of the 16th, a period of 45 hours. She was then about 30 miles above Mangalore; and as the Victoria had had the wind from the southward and eastward, with a heavy swell, when passing that place 8 hours before, it is highly probable that by this time the S.E. breeze had also reached her. Allowing this to be the case, she had for the next 20 hours a heavy sea current and constantly increasing wind against her, and could not have

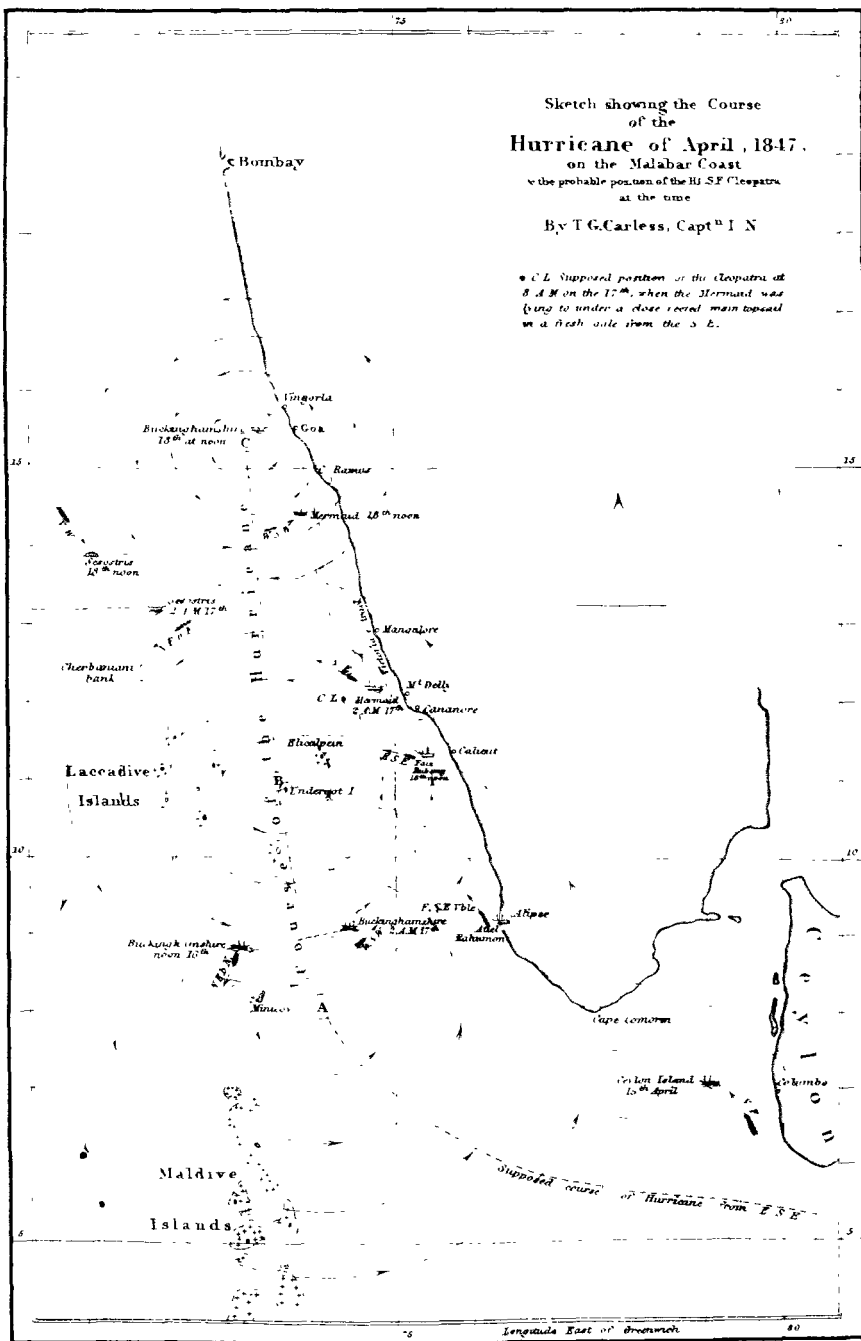
made more than 90 miles, estimating her average speed to have been $4\frac{1}{2}$ knots per hour. This gives 428 miles as the whole distance run from Bombay, and places her at 8 A.M. on the 17th in lat. $12^{\circ} 5' N.$, about 40 miles from the land, with Elicarpine Island, the nearest of the Laccadives, 50 miles to windward. At this time the Mermaid must have been very near her, and was lying-to under a close-reefed main-topsail in a heavy gale. Allowing even that her speed whilst running down the coast was greater than that I have given her, which I do not think at all probable, she would not have advanced more than a few miles to the southward of the spot in which I have placed her. From the account given in the log-books of the different vessels, of the weather they experienced on that part of the coast at the time, I have come to the conclusion that the Cleopatra could not have reached the Laccadive Islands at the period when the hurricane first reached her; and a reference to the chart will show that she was nearer its vortex than the Mermaid, Faiz Rubany, or Victoria; and consequently must have been more exposed to its greatest violence than either of those vessels.

Sketch showing the Course
of the
Hurricane of April, 1847.
on the Malabar Coast

with the probable position of the H.S.F. Cleopatra
at the time

By T.G. Carless, Capt^l I.N.

* C.L. supposed position of the Cleopatra at
8 A.M. on the 17th, when the Bermuda was
lying to under a close reefed main top-sail
on a fresh side from the S.E.



XII.—*Geography of the Cochin-Chinese Empire.* By Dr. GUTZLAFF. Communicated by Sir G. Staunton, Bart.

[Read Nov. 27, 1848.]

It is the principle of the Chinese government to keep their subjects as much as possible from all contact with foreigners; and the neighbouring states have improved upon this policy. If there are no seas and deserts, the government on both sides requires a space between the two countries to be left a jungle and wilderness. If there are mountain defiles, they are guarded in order to prevent all intercourse. Frontier stations are established and garrisons are maintained at an immense expense, to prevent the subjects of the respective countries from trading with one another. In accordance with this system, the Chinese have left the whole space where Kuangtung province borders to the S.W. on Tunkin in the possession of straggling adventurers and native tribes. The last city in this region is Kinchoo, a mean place on an estuary, and about 14 miles from the frontiers. The two countries are separated by a stream, called the Nan-gan-keang, which flows with a winding course from the mountains of Kwangse into the gulf of Tunkin. The tract for about 20 miles to the west and south of the river is debatable ground, claimed by neither power, in many places an impenetrable jungle, frequented by wild beasts and criminals. On the Chinese side there are some poor fortifications: and at the mouth of the river a small garrison, with a custom-house. There are three ridges of mountains, which run in a parallel direction south-east to the shore of the gulf. The Tunkinese side of the frontiers is one continuous flat, with a very fertile soil. On the coast there are a few miserable fishermen.

In this part Tunkin extends to 22° N. lat. The Chinese frontier presents a complete contrast with that of the Tunkinese. A chain of mountains to the south-west of Kwangse separates the two states. On the Chinese side, along a frontier of above 100 English miles, there are eight flourishing cities and fortresses; on the Tunkinese side all is an unhealthy wilderness. The first place of importance in Tunkin is Lang-bak-tran, about 30 gr. m. inland. The Nan gan river here likewise constitutes the actual boundary.

In the western extremity of Kwangse are situated the mountains which contain the precious metals, and extend along the Yun-nan frontiers. The two empires have never quarrelled about the mines, but have allowed a Laou tribe to work them, in consideration of paying a per-centage to the mandarins of both countries.

Nothing can be more dreary than the Yun-nan frontier for about 100 geographical miles: mountains rise above mountains, some of them capped with snow, and furnish only a very scanty subsistence to a few scattered tribes, who are the miners of the district. The only city of any note on the Yun-nan side is Kae-hwa-foo. The mountains render all fortifications on this frontier unnecessary. The Tunkinese frontier is more populous, and the land is cultivated. The most northern district, a large and fertile valley surrounded by lofty mountains, Kaou-bak-tron, once constituted an independent state. The most western district, Tuyen-kwang-tron, is richly watered, and produces rice.

General Aspect.—The Cochin-Chinese empire, Viet-nam An-nam, and under the present kings, the Great South, is naturally divided into three, if not four parts.

1. Tunkin (eastern capital), or Dang-gnoi (the outer region, when spoken of with reference to Cochin-China proper, —which is called Dang-trong, the central or inner), is mountainous on the north, and of the same general character as the adjacent Chinese provinces. On the west, the same chain which separates Cochin-China Proper from the interior of the peninsula, constitutes the boundary towards the Laos country. The east is nearly level, terminating towards the sea in an alluvial plain. On the southern frontier, towards Cochin-China, a wall extends from the mountains to the sea; but the wall is now useless, as both countries are under one sovereign. Next to Korea and Japan, Tunkin has most completely maintained its exclusive system against foreigners; and after all that has been written on the country, it is still almost unknown.

Towards the north, as far as the Song-ka river. Tunkin extends from $103^{\circ} 50'$ E. long. to about $109^{\circ} 48'$ E. long.; but from this latter point it is hemmed in by the great Yun-nan ridge, which runs parallel with the sea: $17^{\circ} 36'$ is its southern limit, and the northern is in $22^{\circ} 55'$. It is generally fertile, and contains a large industrious population.

Most of the rivers flow in a south-easterly direction. The largest is the great river Song-ka, which is formed by the union of the Le-teén, a stream which constitutes the boundary between China and the Laos country, and the Song-shai, which rises in the latter country, and passes through a mountain defile not far from the principal city in Tuyen-kwang district. The sand of these rivers contains many particles of gold, and thousands of people are engaged in collecting it. The river then runs south-east, having the capital of Tunkin—Kecho or Hanoi—on its right bank; it makes a sudden bend at Heen, and then, turning northward, forms a delta, in which

Domea, the port for foreign shipping in former times, is situated. It has three mouths; the northernmost of which has the deepest water; the southern is nearly inaccessible to vessels drawing above 10 feet, on account of the banks and shallows. This river, by its periodical overflowing, fertilizes the rice-fields. In spring, after a severe winter in Yun-nan, it discharges a great volume of water. It is not much larger than the Oder; but it has numerous tributaries, and several branches are joined together by canals, both for irrigation and commerce. South-east of the mouth of the Song-ka there are seven streams, all of which flow into the sea. The intervening country consists of swamps and a few rice-fields, and is frequently under water. It is the residence of numerous fishermen, who also hunt the alligator, which is used as food, the flesh being sold in the shambles. It is by no means uncommon to see five or six of these monsters in the court-yard of a fisherman's hut with their mouths gagged. The produce of these fisheries is immense; it supplies the poorer classes in the interior, who seldom taste any meat, and still leaves a large surplus for exportation to China. This thrifty, hard-working race leads a wretched life. Living in their miserable boats, which are often not water-tight, or in huts made of leaves, dry sticks, and bamboo, when they are drying and salting fish, they have scarcely rags sufficient to cover their nakedness. Their skin is tanned by constant exposure to the weather; their customary diet is the refuse of the fish which they catch, with a little rice and salt. Their females are ugly and filthy, and very prolific. Yet these fishermen are a cheerful people, always laughing or singing; they endure hunger, heat, cold, and wet without grumbling; and when a thousand of their brother-fishermen are swept away by an unexpected typhoon, another thousand is ready to take their place.

2. *Cochin-China Proper*, or *Dang-trong*, a small strip of land, from 10 to 20 geographical miles in breadth, extends from the southern frontiers of Tunkin to about 12° S., where it borders on Tsiampa. This country is bounded on the west by naked mountains, which have only a scanty vegetation, and for ten miles inland it is a complete desert. The most important river is that on which the capital is situated: but the Songve and Songdalang are larger. Having traversed the regions inhabited by the Annam race, the traveller comes to lofty mountains, which present a dreary waste. No European has yet visited them.

3. *Tsiampa (Champa)* is a narrow strip of land extending to about 11° 35' N. lat. It is inhabited by a peculiar race, more resembling the Malay than the Annam. It has one

great river, the Song-luong. Since the incorporation of this country with Cochin-China, the aborigines, at one time bold navigators of the Indian Archipelago, have retired to the mountains, a forlorn and persecuted race, and a few thousand Cochin-Chinese have taken possession of the coast.

4. Kambodia, or Kamen: the former name is used in the sacred books, and adopted by Malays and other foreigners; the latter is applied to themselves by the natives. The part which belongs to Cochin-China presents a continued flat; a rich alluvial soil, full of navigable rivers, one of which, the Mekom, is among the largest rivers in southern Asia. This river, which flows through a rich and varied valley, takes its rise in Yun-nan, on the frontiers of Sefan, in $27^{\circ} 20'$ N. lat., where at first it has the name of Lan-tsan; but towards the south, and before it enters the Laos country, it is called Kew-lung-keang, or Nine-dragon river. The volume of water which it receives in its course from the stupendous mountains through which it makes its way, renders it a mighty stream. In the Chinese territory it runs a considerable distance through a magnificent valley. In 16° N. lat. it bends more to the east, and enters Kambodia, after having received a large tributary: it then drains the whole length of that country, and falls by three embouchures into the sea in about $9^{\circ} 34'$ N. lat. In many places the river is very deep; in others there are rocks and cataracts, shifting banks and shallows, all which impede the navigation. Like all great rivers, it has some outlets which are only accessible at high water. The river is navigable in Yun-nan, and there are many flourishing cities upon it. In Laos many thriving villages adorn the banks; and in Kambodia the principal population is near it. We may conceive what a mighty stream that must be which traverses 18 degrees of latitude, and forms at its mouth an alluvial deposit only second to that of the Yang-tsze and Hwangho.

North-east of Pe-nompeng (Kalumpé), the present capital of Kambodia, is a large lake, the Bienho, in Cochin-Chinese; in Kambodian, Tanle-sap (fresh-water lake); from which a broad stream flows into the Mekom. The Saigon river, which all our maps represent as only being about 20 miles long, is nevertheless a very deep river, easy of access for ships of the greatest burthen, being six fathoms over the bar at the principal entrance, and ten deep in mid-channel. It is joined to the Mekom near its mouth by two channels; and probably it is really one of the outlets of that mighty stream.

Kambodia is a land of rivers. The natural fertility of the soil is very great; but the inhabitants are still behind in

agriculture. *Kambodia* is nevertheless the granary of *Cochin-China*, and is rich in all kinds of productions.

There are numerous other rivers. On the frontier of *Siam* is the *Kho* river, an insignificant stream, but the boundary between the two countries. On the banks of the *Pong-som* (also called *Com-pong-som* or *Vung-tom*) there is a considerable trading place. *Vin-tam-phu*, principally inhabited by Chinese. The *Hatien*, or *Kang-kao* (in $10^{\circ} 14'$ N. lat., $104^{\circ} 55'$ E. long.), has a great depth of water; and on the bank there is a flourishing town of the same name, inhabited by many Chinese traders and navigators. This was once a great emporium for the whole *Kambodian* trade, and known to Europeans under the name of *Pon-tea-mas* (*Potai-mat*)—a name at present obliterated from the maps. While civil strife in the interior occupied the attention of the king, a man of Chinese descent availed himself of this opportunity to declare it a free port, and thousands of merchants established themselves there in a few years. Justice was administered, the place grew rich—for every man found there a safe *dépôt* for his goods, and willingly became a subject of the liberal commercial chief. But the envy of the *Siamese* did not view with indifference so much happiness, and they destroyed the emporium in 1717. *Kangkao*, which took its place, is still a considerable trading-station for the exportation of rice and salt, principally to *Singapore*. The junks which belong to it are small, for the harbour is very shallow. In order to facilitate the intercourse the *Cochin-Chinese* have again opened the canal which joins this river to the *Mekom*.

The *Karmunsa* (by the *Cochin-Chinese* called *Rachgea*, and by the Chinese *Teksea*) is joined not far from its embouchure by a considerable tributary, and it falls into the gulf of *Siam*. It has only recently been joined by a canal to the great *Kambodian* river. However oppressive the *Cochin-Chinese* government may be, they wish to facilitate inland communication in imitation of the Chinese, and wherever it is practicable the mandarins effect it by forced labour.

The *Tek-maou* (Black water river) is in connexion with the *Mekom*, and falls by three embouchures into the sea, in $8^{\circ} 40'$ N. lat., opposite to *Poolo Ubi*. It is a navigable river, and the water is largely used for irrigation. The soil on its banks is fertile; but fertility does not ensure good cultivation in a country where a little labour produces all that a man wants, and an industrious person is an object of extortion to the rapacious government.

Upper *Kambodia* extends beyond the 11° N. lat., and com-

prises nearly 5° of longitude in breadth (103° 10' to 108°). It is situated on both sides of the Mekom, extending eastward to the Cochin-Chinese range of mountains, and westward to Battambang, the province ceded to Siam, which formerly constituted an integral part of the kingdom: at which time the second mountain range, which issues from Yun-nan and traverses the whole peninsula in its length, was the natural western boundary. To the N. its confines are marked by the bend of the Mekom, the left bank of which belongs to the Laos tribes, who nominally acknowledge the Annam sway. The greater portion of this region is a plain, covered in many parts with magnificent forests, abounding in teak and dye-woods, the resort of tigers and elephants. There are very few cities. The Cochin-Chinese government, being determined upon retaining possession of this country, has made roads through these regions, and one may travel with ease on elephants to the Chan territory. Such is the kingdom of Kambodia, which contains so many natural advantages, and yet continued a paltry state until it was swallowed up by two more powerful neighbours. The only enterprise ever undertaken by this people was to the E. coast of Borneo, where a colony was founded; occasionally they also visited the Philippines.

5. The Moi territory. There are few races so low in the scale of civilization as the Moi mountaineers, who inhabit the regions between Kambodia and Cochin-China, from 10° 40' to 16° N. lat. The Annamese apply the term Moi to all the numerous tribes, which speak different dialects and have different customs. The natives live chiefly on wild fruits and on roots; some sleep in trees, and put a few branches together to make a shelter against the weather; others construct mean huts, and live in small communities, but there are no large villages. The poverty of these people is so great that it has never tempted the avarice of their neighbours to penetrate among the defiles, except for the sake of capturing the people and selling them as slaves. The only place of importance is Nuok-stieng, a Kambodian settlement in the S., on the Song-luong river, which flows through Kweinhon province into the sea. The Cochin-Chinese joined it to the Mekom by a canal, so that they are able to cross the whole country by water. Farther on, near Tay-son-thuong, there is a pass by which the intercourse between Binh-dinh and the Mekom is kept up; another pass, more to the N., which leads from the latter place through numerous valleys for a distance of more than 120 g. miles, to Than-laou-buthai, is a monument of the enterprise and perseverance of the Annamese. The forests abound in eagle-wood, an article much sought after.

6. Territory of the Laos tribes subject to Annam. The whole of the interior of the peninsula is inhabited by a quiet, hard-working race, whose harmless disposition has brought them in subjection to the sway of their neighbours, the Siamese, Birmahs, Chinese, and Annamese. The territory of those who acknowledge the Cochin-Chinese king is to the N. of Kambodia and of the Mekong, which assumes the name of Kewlung in 17° N. lat.; on the N. it borders on Tunkin; on the E. the great ridge of mountains above mentioned divides it from Annam; and on the W. it borders on the tribes which are under Siam and China. The breadth of the country varies from 20 to 25 g. miles; there are many cities in the S. and W., but the eastern part is desolate. Here is also a road, traversing the whole length of the country, to the first Chinese Chan station, Nin-beën-chaou, and there are two others in the S. which communicate with Tunkin. Two chains of mountains in the N. traverse the plain, another branches off towards the W.: there are few rivers, and these are but mountain streams. The north-western frontiers border closely upon the Birman dependencies in the Laos country. All accounts describe the country as being in a very flourishing condition, inhabited by thrifty people, who live happy under their patriarchal chiefs; they cultivate the ground, and have some silk and gold manufactures.

If we compute the whole Annam empire to contain 9800 g. sq. miles, we shall not be very far from the truth. The extent of Annam is about equal to that of France, and if we assign to it 12 or 15 millions of inhabitants (all tribes and nations included) we shall probably not exceed the truth.

Coasts and Islands.—1. Of Kambodia. Having left the Siamese island Kokong, and sailing along the very low coast of Gosatran (Pursat, in Kambodian), where mangrove-trees alone serve for landmarks, we reach the large island of Kothrol (Phukok, by the Cochin-Chinese), which is separated by navigable straits from the main, and has many islets to the N.W., of which the prevailing formation is sandstone. It is about 7 miles long and 3 broad; the harbour in 10° 17' N. lat. and 104° 16' long.; well wooded, producing the celebrated eagle-wood; and on the whole coast the *tripang* constitutes, for its value in China, the most important fishery. The natives spear this slug (*Holothuria*), instead of wading through the sea to catch it with the hands, as is done in other places.

To the E., close to the main, is a considerable archipelago (Nhieu-kulao or Nhieu-hon, in Cochin-Chinese) of islets, overgrown with trees, but uninhabited, among which are many fishing stations; and the *tripang*, as well as the seaweed (agar

agar), an article much esteemed in China when boiled down to a jelly, constitute here the principal articles for exportation. Various islands, such as Hontre, in N. lat. $9^{\circ} 58'$, long. $104^{\circ} 37'$ E., Hondat, Hon-kon-ray, and Holon, stretch out towards the S. All these are along the W. coast of Kamaou, or Hateën. Next, Kang-kao harbour, N. lat. $10^{\circ} 5'$, is broad at its entrance, but shallow. Farther S. is the embouchure of the Rach-gea and the Kay-kwao harbour, a small inlet for fishing craft. The coast is here even lower than towards the W., and subject to frequent inundation.

Pulo Ubi False, about 5-6 leagues westward from Mui-ong-dok, the most southern promontory of Kambodia, whence a considerable sand-bank runs into the sea, has several islets around it, is thickly wooded, and contains some springs of pure water. Whenever the people of the main are visited by an inundation of the sea and destitute of rain water, they procure their supplies here.

Hon-kwae (Pulo Ubi). 5 leagues S. from that promontory, in N. lat. $8^{\circ} 25'$, long. $104^{\circ} 51'$ E., has high mountains, which may be seen from a great distance. The Kambodians call it Ka-tam-bung, the Siamese Ko-man: it has a scanty vegetation, and no production worthy of remark. There are a few inhabitants at present collecting the seaweed for the Chinese market, and acknowledging the king of Annam for their sovereign. The Chinese who sail to the Indian archipelago consider this as the principal landmark. Both islands bear the name of Ubi, on account of the immense yams, 40 lbs. to 100 lbs. in weight, that grow wild there.

Pulo Panjang, in N. lat. $9^{\circ} 5'$, is surrounded by six isles. The principal formation is sandstone. It is only inhabited accidentally when the pirates from the Solo islands resort there, or when Chinese sailors stay there to collect sea-weed. The Cochin-Chinese government claims the sovereignty, and calls it Tho-shan, without endeavouring to disperse the outlaws who trouble the Archipelago with their depredations, and often annihilate the whole trade carried on along the coast of Kambodia.

We mention here Pulo Way, in lat. $9^{\circ} 55'$, off Cape Liant, as debatable ground, without any inhabitants and any other importance, except as a landmark for navigators.

Far more celebrated is Konnon Condore (by the Chinese Kwan-lun), in N. lat. $8^{\circ} 40'$, $105^{\circ} 55'$ E. long. in the form of a crescent, with high peaks. It produces a variety of plants and trees which one seldom sees in other regions, such as the milk and tar-tree; it is now well inhabited, and furnishes many curious productions to the Annam court. It is the

largest island in this district, and greatly esteemed by the Cochin-Chinese; to the Chinese it is a principal landmark in their southern navigation. On account of its convenient situation the English founded, in the beginning of the last century, a colony, and built a fort there. This existed a very short time, and was ruined by the treachery of some Buginese mercenaries in the pay of the Company: the greater part of the Europeans having been assassinated, it was ultimately abandoned. Foreigners landing there were most friendly received and well treated. Many islets are situated all around, and form excellent harbours. Towards the E. we merely mention two rocks, Pulo Sapata and the Cutwick, to which the Cochin-Chinese have affixed no names, and which are remarkable for constituting the utmost extent of the typhoon range.

We should not mention here the *Paracels* (Katvang) which approach 15-20 leagues to the coast of Annam, and extend between 15°—17° N. lat. and 111° -113° E. longitude, if the King of Cochin-China did not claim these as his property, and many isles and reefs, so dangerous to navigators. Whether the coral animals or other causes contribute to the growth of these rocks we shall not determine; but merely state that the islets rise every year higher and higher, and some of them are now permanently inhabited, through which the waves, only a few years ago, broke with force. They would be of no value if the fisheries were not very productive, and did not remunerate all the perils of the adventurer. From time immemorial, junks in large number from Haenan, have annually visited all these shoals, and proceeded in their excursions as far as the coast of Borneo. Though more than ten per cent. are annually wrecked, the quantity of fish taken is so great as to ensure all loss, and still leave a very good profit. The Annam government, perceiving the advantages which it might derive if a toll were raised, keeps revenue cutters and a small garrison on the spot to collect the duty on all visitors, and to ensure protection to its own fishermen. A considerable intercourse has thus gradually been established, and promises to grow in importance on account of the abundance of fish which come to these banks to spawn. Some isles bear a stunted vegetation, but fresh water is wanting; and those sailors who neglect to take with them a good supply are often put to great straits.

Returning to the E. coast of *Kambodia*. Of the many embouchures and islets of the delta we have already spoken; the deep estuary Dinh-tuong is connected by a small stream with the Saigon river. This anchorage is entirely unknown

to foreign navigators, but of importance to the coasting trade.

The first highland is the Mui-vintau (*Cape James*), in $10^{\circ} 16' 41''$, long. $107^{\circ} 4' 15''$, and the whole coast assumes a different geological aspect, granite being of frequent occurrence. The bay formed by it on the S. and on the N. by the Mui-thuivan (*Cape Ti-woane*) is distant from the former about 13 *E. miles*. The river Lap falls into it, after having traversed a fertile and thickly inhabited country; vessels not drawing above 6 feet can ascend it for some distance. The Mui-ba-kek constitutes, with the former, another bay, at the bottom of which we find likewise the mouth of a still smaller river. Since the *Cochin-Chinese* have taken possession of the country these natural advantages have not been neglected, and a great number of small vessels are constantly sailing along the shore; docks have been established, and the principal junks and ships are built there on account of the cheapness of timber. If the people had any share in this it would be pleasing to dwell on the favourable change, and the benefits conferred by the new rulers. Government, however, monopolizes everything: the barks that are laden with rich produce carry it to the coast, the vessels launched are revenue cutters or men-of-war, and the natives, like aliens, are excluded from all the natural advantages. The invariable principles of this Government are to keep the subjects poor, that they may be more obedient, and to oppress the *Kambodians* in order to extinguish their nationality.

One continual tract of extreme sterility meets our eye the moment we approach the coast of *Tsiampa*. Sand-hills without any vegetation, peaks with stunted shrubs, granite formations of every description, and a reddish disintegrated mass of stones meet here the wanderer, who is seldom gratified by the sight of greensward. This desolation does not, however, confine itself to the coast alone, but extends over the whole breadth of *Tsiampa* to the *Mekom*, and over *Kambodia*. The mountains, which are here only 200 feet high, rise there to 8000, yet are not entirely naked.

As the coast is sterile in vegetation, so it is rich in harbours, and much resembles in both respects the south-western parts of *Fokeën*.

The *Kamranh* river separates the two countries, and falls into a bay formed by the *Bakek* and *Kega* promontories. At the entrance is the dangerous *Britto* shoal and the *Honba* (Cow island). A few poor wretches live here as fishermen, but far and wide not one large city or village exists.

Off this coast, in lat. $10^{\circ} 32\frac{1}{2}'$, long. $108^{\circ} 53'$, is *Kulaou-*

thu, an island much celebrated for its birds'-nests and abundance of tripang, and hence visited by the Annamese, under control of Government, which never allows a single article whereon a duty may be levied, or a monopoly contracted, to escape its vigilance.

Bay follows here on bay, exhibiting the same barren aspect, with sundry ridges of hills running N.E. and S.W. into the country.

The Phugiay Bay, between Kega and Vinay promontories, is conspicuous for a very high peak, at the foot of which two streams fall into it at Phantiet, a small town, and one of the stations established by Government. They descend from the Moi-vi mountains: whether or not they are navigable to any extent we have not been able to ascertain.

In the bay formed by the Muy-lagan Cape, 16 E. miles N.E. of Vinay, the largest river of these regions, which stands in connexion with the Mekom, called the Long-luong, falls into the sea. The country then assumes a more cheering aspect, and not far from its mouth is Binh-doan-dinh, the metropolis of Tsiampa, and present seat of government. The inhabitants are more numerous, and enabled to carry on agriculture by the neighbourhood of the river.

Koo-laou-kau (Hon-kau, or Pulo Ceicer de terre), in lat. $11^{\circ} 13'$, long. $108^{\circ} 48'$, is a famous fishing-station, which, with the Lagan and Muy-din (Pharang-Padaran) promontory, forms another harbour, at which Kana is situated. The latter is in lat. $11^{\circ} 21'$, long. 109° E., 5 leagues from the island: a bluff and high cape, about 3000 feet above the sea, joined by a low sandy isthmus to the main, so as to have the appearance of an island. As it is very difficult to double the promontory with a head-wind, it has received from our sailors the name of the Cape of Good Hope. We find here a small city, Vung-vang, at the bottom of the harbour, where Annamese industry is contending with an ungrateful soil. From Muy-din, N.N.E. $\frac{1}{2}$ E., $8\frac{1}{2}$ leagues, is the Davaeh Cape, of an oblong form, with steep cliffs; the whole region around presents a vast scene of desolation, and hence the name applied to the promontory (Davaeh, Sterility).

The deepest of all the bays is that of Kamraigne, and having Tayu, a high island, at the entrance, and being surrounded on all sides by land, it has rather the appearance of a lake. The mountains in the neighbourhood are said to be rich in silver. The river, which forms the northern boundary of the Tsiampa country, and which the hydrostatic skill of the Annamese has joined to the Mekom, falls here into the sea, after a course of 37 g. miles, reckoned in a straight line at the northern extre-

mity, near Thuy Trieu. For keeping up the inland communication it is of incalculable benefit to the country. The N.E. land which forms this spacious harbour becomes a peninsula by a small river, which at Khaou Kho rises in a marsh, and runs due S. into the bay, parallel to the coast among sand-hills for 5—6 leagues. This appears to be the most spacious and best harbour which Annam possesses; but there is no inducement either for foreigners or natives to visit it. The inhabitants all around are poor fishermen, earning a precarious subsistence, and, moreover, exposed to the extortions of the mandarins.

North of Kamraigne bay are the Hon-noi and Hongnoai islets (water islands) in $12^{\circ} 2'$ and $12^{\circ} 4'$, with several rocks around. There is a large sandy plain, extending to the southern entrance of Nhia-trang bay, about 3 leagues in extent, and forming with a bluff point the Lam-toan bay. The former receives its name from the province in which it is situated. The inhabitants are exclusively Cochin-Chinese; the land is well inhabited and cultivated, and the whole bears a far more cheerful aspect than the southern regions. The bay itself is very small, and sheltered towards the E. by the Hontre island, but there is very good anchorage at Binkung. A few miles W. is the largest city in these regions, and the metropolis of the province, Binhua, a thriving place, with an industrious population. Another river, which is likewise connected with the Mekom, falls here into the sea. We find everywhere traces of the calculating principles of the mandarins in facilitating intercourse by opening canals. There are a number of reefs and islets, of which we mention *Pyramid* island, in lat. $12^{\circ} 21'$, with a cone on it, from which it received its name; and another, called Shala. The region here presents a romantic aspect—the trees are shady and tall, and some of the valleys offer charming views, heightened by the contrast of the barrenness of other spots in the bay of Hong-khoe, 5 leagues N. of Pyramid island. Between the main and the island Hodinh, which runs out in the Kay-sung promontory, there is a passage several leagues in breadth, showing on both sides elevated hills and a very woody country. Here also, at the city of Thienphat, a river falls into the sea. This district has scarcely ever been visited by foreigners. E. of this are the Doi-moi islands. We have thus reached the easternmost point of Annam, viz., Muinai (Varela promontory). Here we still remark that a very deep bay runs in from Hon-khoi N.E., which bears the name of Ongro: at the bottom a high mountain of a picturesque form may be seen many miles off. The peninsula, of which this is the cape, is narrow and sandy, possessing nothing of the pleas-

ing nature of the mainland. Muynai mountain itself is about 2000 feet high, and one of its peaks has the appearance of a broken column. Here, according to report, silver is found; and in the middle a hot fountain bubbles out of the ground. The peak can be seen at an immense distance from the sea, and constitutes an excellent landmark: its situation is in N. lat. $12^{\circ} 53'$, long. $109^{\circ} 24\frac{1}{2}'$ E. A perforated rock (Da-khoan) is 4—5 N. $\frac{1}{2}$ W. from it.

The harbour Daran has in its neighbourhood the Maenha and Baimaieng islands not far from the mainland, and receives the Dalang river. The coast is not much elevated, and runs for 6 g. m. nearly due north.

We have now come to the richest part of Cochin-China, Phu-yen-tran, a well-cultivated productive district, both remarkable for its fertility and its beauty. The principal place, Phu-yen, situated on a land-locked harbour in lat. $13^{\circ} 23'$, has three different anchorages for vessels, viz., the Chuen-dae, Vung-lam, and Vung-chao. The country is seen to the greatest advantage—industry and a large population uniting to give to the scenery the highest effect.

Kalao-xanh (Pule Combir) in lat. $13^{\circ} 33'$, 4—5 m. westward of Muynai, has a sloping appearance, but, unlike the main, it is barren, and forms with it Vung-koo-mang bay, an anchorage of considerable depth. We next arrive in Chogia harbour (Combir bay), a spot little known, as well as the islands that are scattered about in this direction, with a safe passage between the main. Numerous fishermen resort to them, and however small the islets may be, they constitute useful appendages to the mainland.

Nouk-man (*Quinhon* harbour) presents a very spacious anchorage; though very shallow, and not admitting ships of a deep draught, it is much visited by native vessels. This harbour is formed by a peninsula running down S.E. into Cape Sanho, lat. $13^{\circ} 44'$, long. $109^{\circ} 14'$; and the principal place, *Bindinh*, the capital of the district, is situated close to it. The coast is bold, strewed with islands, such as Tuk-tan-chan, Honkon, Honko, and others, which are of interest only to fishermen. The northernmost is Hon-lang (*Buffalo* island), in lat. $14^{\circ} 11'$. A river falls into the sea in Vung-nuok-ngot (at fresh-water point); and northward 3—4 leagues is *Turtle* island, near which good anchorage is found.

Before reaching the coast of Kwang-gnaitran, of which the Sahuinh estuary and Song cape constitute the boundary, we arrive at the mouth of the Tan-kwan river, in lat. $14^{\circ} 39'$, and the harbour Saphu: a little farther northward is a deep islet, called Cua-kun-bong. Wherever one lands one meets bustle

and activity, and desolate loneliness has entirely disappeared; the inhabitants have changed, by their energy, the sandy spots into fertile fields. Farther northward, near Tracau, another small river falls into the sea, the coast is less indented, and the hills exhibit traces of cultivation, until we reach the estuary of Quang-ngai, on which stands a city of the same name. Between this spot and the promontory Saky (Batangan), Culao Re (Pulo Canton, in lat. $15^{\circ} 23'$, long. $109^{\circ} 6' E.$), there is a large, sterile island, through which three ridges of hills run the whole length, with here and there some stunted trees growing in sandy soil.

The Thong-binh and Lam-cham capes are bold, and on having doubled them, we enter the haven of Vang-guit-quit (Aphoa) on the southern boundary of Quang-nam district, close to the foot of lofty mountains.

The coast hence extends N.W. b. N. 15 leagues, to Turan (Cua-han) bay. On the northern side of Aphoa a river falls into the sea, and the country around is either artificially or naturally watered. Various small islands, such as Hon-ban-than and Hon-nan, lie scattered hereabout: Cu-laou-cham is in lat. $15^{\circ} 54'$, a very high island, about 3 leagues from the main, bold and barren, with huge masses of rock piled upon it. The coast is steep; grey granite, granulated, and embedding quartz and mica, are the prominent features of the formation.

Faifo, the largest emporium for the Chinese, and formerly for the Japan trade on this coast, is situated on an estuary, into which a river empties itself, and joined to Turan by a salt-water creek which runs parallel to the coast. It has a very extensive commerce, and is a flourishing emporium. A little farther up we find Quan-nan-dinh, the principal place of this region; it is at the bottom of the inlet, into which the Dai-cham river flows.

No place along this whole coast is so well known as *Turan Bay*: the eastern extremity of the island (Hon-san-sha), or peninsula which forms this harbour, is in lat. $15^{\circ} 5'$, long. $108^{\circ} 15' E.$, and Calao-cham in lat. $16^{\circ} 11'$. Approaching from the south, masses of marble rocks (dolomite)—grotesque in appearance, and at variance with the scenery around—appear as if they were insulated, because the sand around them is very low. There are three streams; the mouths of one river fall into this basin, which is surrounded by mountains on the main, like an amphitheatre, and only the south side in the direction of Faifo presents level ground. It is about 8 miles in breadth, but the landlocked anchorage is of a very moderate extent, at the N.E. and the S. angles. Even in fine weather a heavy swell breaks on the shore, which renders land-

ing dangerous. The neighbourhood of the capital, and the promise of Gialong, the former King of Annam, to cede the country around to the French if they afforded him the requisite assistance in suppressing the rebel Tysons, have rendered this bay famous to European navigators.

The island Hon-hanh is N.W. of Turan; and not far from it the harbour of Vungdam, which is about 5 miles across. The surf which breaks here on the rocks is quite terrible, and the anchorage during the N.E. monsoon dangerous.

On approaching the coast of Kwangduk, on which the capital is situated, we first espy the cape of Choumay, in lat. $16^{\circ} 21'$ N.W. b. W., 9 leagues from Turan, near to which are Moi, wherein a river flows, and Tudong, two small harbours.

The bay (Cua-thuan-an) into which the Hué river falls, is similarly protected by an island, as the Turan harbour, but very little known to our navigators; and the entrance of the small river is in lat. $16^{\circ} 35'$. At a distance of a few miles the capital is built on its banks. Over the bar there are about 12 feet of water at spring-tides, so that only vessels of a small draught can cross it. Here also is a heavy surf; and it is most difficult to leave the river during the N.E. monsoon. The entrance is well fortified, with European art, and it would be next to impossible to force the bar, if skilful and brave gunners served the cannon.

The part of the coast we have now traversed has been most carefully surveyed; beyond this our accounts are very scanty, and the gulf of Tunkin remains still, for the greater part, a mare incognitum. This is the more extraordinary, because the seas around have been so minutely examined, and the Annam government itself has neither spared expense nor labour to construct proper charts of them. This neglect arose no doubt from the wish to bury Tunkin in oblivion, and to screen it against the prying curiosity of Europeans. The little information we have been able to glean we shall state in a few words.

On arriving at the coast of Quang-tri-tran we perceive *Honco* (Tiger island), in $16^{\circ} 55'$. S.W. of this is Viet harbour, with the principal city of this region near it, and due W. from Honco, the Tung harbour. The coast is low and sandy, stretching N.W. The last maritime city in Cochin-China is *Kwan-binh*, on a deep islet of the sea (Cua-dong-hor), a flourishing place. On the other side of the wall that separates Tunkin, parallel to it, is a river that falls there into the sea. Andau, with a number of other small isles, lie a little further on, close in shore, which presents not the least variety, but is a continued flat, intersected by numerous streams that run through the

whole of the island. The first anchorage we meet with is called Gianh. The coast trends from hence N.W. b. N. for 10 leagues, and is scarcely visible to a vessel close in shore. In lat. $18^{\circ} 14'$ we find the large island Sorel, with Hongnu, and a number of others, near the coast of Nghéan-tran, which we believe to be alluvial deposits, at the mouths of several rivers that fall here into the sea. There is no doubt good anchorage between them, though it has never been ascertained by observation and research.

Sonthai-tran has several small harbours, such as Cua-thai and Han-hon, which are commodious for fishermen. The coast runs here nearly N. to the island of Tin Cay, an extensive well-inhabited spot, in lat. $15^{\circ} 18'$, and the well-sheltered bay it forms has two arms of a river falling into it. We mention the names of the harbours that follow each other in succession, though none of them is of any importance: such are Cua Bang, Bich Hon-ne, and Trieu, the latter the northernmost. No large city exists, and the region appears to be the property of fishermen and rice cultivators; whilst the merchant does not possess an inch of ground. *Cua-lac* is a spacious harbour, sheltered against all except southerly winds, and the abode of a few merchants. The large Thanhphu river falls into this bay.

Nam-dinh-tran is the Sunderbund of this part of the world. The harbours formed by the various embouchures of the river, distant from one another only a few miles, commencing S., are the following:—Cua Thuoe, Xien, Bien, Lan, Traly, Ho, Dai-binh, the latter at the S. entrance to the Song-ca, Cua-uc (the northern, in $20^{\circ} 50'$); the nearest place to this is Domea, celebrated as a trading station in times of yore. For the southern, which is visited by Chinese junks, Fisher Island serves as a landmark. There are shoals and reefs hereabout in great number, which render the navigation very dangerous. Add to this the typhoons, which blow here with overwhelming force, and it is by no means surprising that so little commerce exists with a country which, in other respects, would invite by its industry foreign traders. The water over the bar of the southern branch of the river varies according to the freshes; and where one finds 12 feet at one time, one has at another 18—20. The navigation is very precarious, and exposed to great risks and danger, as long as no survey is made.

Now, little remains to remark. The two bays of Ke-keu and Ke-to, on the N. coast of the country, receive both rivers, and afford good anchorage. The latter is the most spacious of those of the whole empire, and has at least eighteen large islands in it, which are inhabited; but we have no further information as to their products.

The archipelago on the east coast is disputed ground between the Chinese and Annamese, and vagabonds of both nations find here a place of refuge. Both governments have from time to time sent squadrons of war-boats to destroy the settlements; but the impunity enjoyed here is too great, so a large number of lawless fellows is attracted and rendered sufficiently daring to resist the authorities. Amongst some islets pearl oysters are found, and many boats proceed thither in the fine seasons to dive for them.

Climate.—Kambodia enjoys a delightful temperature, although the weather throughout the rainy season (May—September) is often very sultry: the dry monsoon during the remaining part of the year is clear and the heat very moderate, seldom exceeding 90°, and ordinarily being only about 80°. Cochin-China presents the very reverse of the seasons to Tunkin and Kambodia, on account of the ridge of mountains which breaks the clouds. From October up to January the weather is very boisterous, and typhoons are by no means uncommon—where in the former the wet season reigns, the latter is dry, and *vice versa*. The thermometer never rises there above 103°, nor sinks below 53°, and the climate throughout is healthy and agreeable. Tunkin in this respect resembles Bengal, but participates likewise in the oppressive heat and very disagreeable cold of China. Those who have never witnessed the *typhoons*, which sweep this country from one extremity to the other, will look upon a faithful description of this fearful visitation as overdrawn. Though earthquakes and the eruption of volcanoes may be far more terrific, still if one wishes to form an idea of the last moment when heaven and earth shall pass away, he may take the initiation of a *typhoon*. It is as if everything were devoted to destruction, and the world were again to return to a chaos. No words can convey an idea of such an awful moment, and the violence of the tempest in which man is scarcely an atom. Such is the scourge with which Tunkin is frequently visited, and in which northern Cochin-China occasionally participates.

Productions.—In this we merely point out what the country brings forth in greater perfection than other parts of the world. Loureiro, a Roman Catholic missionary, examined accurately in the last century the botany of Cochin-China,* and attached native names to all the plants. Several French naturalists have after him prosecuted the same researches, so that everything in this branch is well known.

The richest vegetation is found in Kambodia, which pos-

* Vide Loureiro, J. de, 'Flora Cochinchinensis,'—Ulyssipenis, 1790, 2 vols. 4to.—Ed.

sesses the same soil and climate as Siam. and has similar productions. The *teak*-tree is still found along the western shore, and felled by the Hainamese to build junks. Both ebony and red dye-wood are met with in the northern parts; little, however, is exported, on account of the difficulty of transport and the small demand in the harbours. The *Nauclea orientalis* (Go), a hard, black, and heavy timber, admitting the finest polish, is extensively used for furniture. Another sort is the *choo*, which serves similar purposes. The great riches of the northern forests have never yet been rendered available, but a future government will some day understand how to draw advantages from them. Kambodia produces the largest quantity and best quality of *betel*-nuts of any country in Asia, of *three* different descriptions, the red, white, and small. and exports them in vast abundance. The *Areca* Palm is too well known to need here any description; but we may observe that it grows without much culture in extensive gardens. It is remarkable that neither the *mangoosteen* nor *durian* thrive here: the utmost eastern limit of their cultivation appears to be Siam, beyond this they are very seldom found. *Gamboge*, however, with a variety of sweet-smelling resins, are peculiar to this country. The former exudes from incisions being made in the stem of the *Garcinia cambogia*, a very high tree, the fruit of which is eatable. Equally valued in trade is *sticklac*, a substance used in dyeing *red*: it is the produce of an insect, and of very fine quality. The cardamoms of Kambodia are highly prized throughout China, as well as the aniseed (*Pimpinella anisum*). Other articles of the vegetable kingdom are likewise found here; amongst them pepper, which is grown in the west, but not paying the cultivator, it is therefore at present neglected. The mulberry-tree is in some regions extensively cultivated to furnish food for the silkworm. The natives understand the treatment of these insects, and their produce is sufficient for home consumption; the silk goods have even obtained a name in the trade of the interior of the peninsula. As the insects must die before the silk can be obtained, many of the strict Buddhists abstain, out of religious motives, from the rearing of them, in order to preserve animal life.

Tsiampa has one production which is valued all over Asia—the *eagle-wood*, or *alambuc* or *aloes* (*aloexyllum agallochum*), on account of its pungent fragrancy and constant use in burning incense to the idols. There are at least *three* different kinds, yet not well known to botanists: the tree, when old, is throughout its lower parts and roots furnished with an aromatic oil, and hence the agreeable odour of the wood when burnt. It is generally reduced to powder. and then, being

mixed with gum, is smeared on small sticks, of which an immense quantity is used in China in the worship of the gods. As this article keeps up a steady price and is always in demand, it is considered a valuable monopoly, though the best pieces are never sold, but given as presents to princes and grandees.

The *cinnamon* (*Laurus cinnamomum*) of *Cochin-China* has always been celebrated in China, and especially in the south, where the *cassia*, a cheap and excellent substitute, grows in abundance. The sons of Han do the same with respect to this substance as with *camphor*. This they possess in the highest perfection, but they still buy another kind from Sumatra and Borneo for ten times the price: the tree grows in the light sandy soil northward of the city of *Faijò*, and even in the *Moi* country. It seems to be decidedly larger than that found in Ceylon. Ten varieties are known in the market, which differ much in price; the bark of some is thick, of others very thin, but it is never freed of the epidermis in trade: the price fluctuates between 30-1200 dollars per pecul, according to the quality, in the valuation of which the *Cochin-Chinese* doctors excel. The latter will by the mere touch ascertain the value of the nostrum amongst their medicines. They ascribe immense virtue to it in certain diseases, and as a token of the highest esteem make presents of it. The writer having once rendered some service to the *Annam* government, was rewarded by a piece of *cinnamon*, to which the donor affixed an incalculable value. If the king wishes to be very gracious, it is in this manner he shows his condescension, and the principal article of tribute to *Peking* is this bark. *Annam*, moreover, produces excellent *cotton* on the sea-coast (the most adapted to the growth of it) both for home consumption and also for exportation. A coarse *sugar* is grown both in *Kambodia* as well as *Annam*: it is chiefly used in home consumption. A species of *tea-plant* thrives in all the northern parts very luxuriantly: its leaves are coarse, and so the poorer classes only use it. The *Tun-kinese* understand how to apply the valuable products of their country much better than the *Kambodians*. The *varnish-tree* produces a substance superior to the *Japanese*, and furnishes a large supply, not only for home manufacture, but also for exportation, of great beauty and durability. The *chao kwo*, a sort of *cardamoms*, with a variety of other drugs, likewise occurs here: so also the *chuleang* (*Dioscorea alata*), a kind of *yam*, which growing wild contains a brown dye, and is for that purpose very generally bought by the *Chinese*.

The general food of the people is, as in all southern Asia, *rice*. Of this *Kambodia* is the storehouse, which moreover

has a great deal for exportation. *Tunkin*, though producing much more, has, on account of its dense population, less to spare.

We may remark, in conclusion, that the *sweet potato* is the common food of the poorest classes, mixed with a little *rice*. Another article for the consumption of the great mass is the *earth-nut* (*arachis hypogæa*), which grows in a sandy unproductive soil with little care, and is eaten fresh, roasted, or salted, whilst the oil it furnishes is mixed with their dishes as well as burnt in their lamps. The farinaceous root of the *nebulum* (*arrow-root*) is likewise generally consumed: the inhabitants of the more favoured districts use *rice* exclusively, but where this does not thrive, *maize* is partly substituted. There is a great want of pot-herbs and vegetables, and little variety is observed, because the inhabitants never introduce any from foreign parts. The vegetable kingdom of *Annam* more resembles that of southern China, with its rocky mountains and scanty vegetation; but it entirely differs from that of the tropics. *Kambodia*, on the contrary, exhibits the luxurious growth of *Java* and *Sumatra*, and in many respects the same botanical features.

In *Kambodia* the *buffalo* lives amongst mud and ditches, and is a very powerful animal: farther north its fierceness much decreases. The *bullock* is of a very small breed; the *horses*, except in *Laos*, are also diminutive. In the latter country they have spirited ponies, well adapted to warfare and other purposes. There, as well as in *Kambodia*, the *elephant* is domesticated, and used by the Annamese in war, though with no effect. This enormous creature inhabits the immense wastes in large herds, and is very easily tamed. The Cochin-Chinese do not absurdly venerate the white ones, which are worshipped by the Siamese and Birmans: not so the *Kambodians*. In the north of the latter country and in *Laos* the *rhinoceros* (of which several species exist) is found wilder and higher than in any other part of Asia. The number of *horns* that are annually exported, and to which a superior medical quality is ascribed and a higher price demanded, would lead us to suppose that this animal must be common. The *tiger* is not inferior to his congener in *Bengal*, and the *leopard* likewise occurs. The *monkeys* of *Annam* are fine creatures, and seen in the forests in multitudes, but the wildest and strongest species are natives of *Kambodia*: the *pig*, as in *China*, is here the principal domestic animal. All that comes from the *cow* is held in abhorrence, and the antipathy which the Chinese also show to it seems to be more natural than religious. Little attention is paid to the breed of this useful animal: *sheep* are small, and only found in the south, whilst *goats* are frequently seen browsing in the mountains. In all parts our *barn-door fowl*

thrives, and the *pheasant* has spread over the whole country: *ducks* are in the marshy districts reared with great advantage; *geese* are few and not indigenous; both the latter, in a wild state, visit the country in immense flocks in winter. The poverty of the inhabitants prevents their rearing a great quantity of domestic animals—meat, moreover, is not a usual portion of their food. The coasts, as well as the rivers, are rich in *fishes* remarkable for their splendid colours: the *Annamese* are first-rate fishermen, but the *Tunkinese* surpass them. There is no art which is carried to so great a perfection as *fishing*, nor on which, comparatively, so large a number of persons is employed: they proceed to the capture with nets, hooks, harpoons, wicker-baskets, bamboos, in all kinds of vessels, and adapt their contrivances to the fishing-ground. By far the larger part of the population subsists on *fish* and *rice*; hence the enormous demand. Government has, however, so managed its taxes that the hardworking fishermen scarcely earn a subsistence.

Of the *alligators* we have already spoken: it seems to be the largest kind that is found on the coast. The *shark* is caught and eaten; so also is the *Boa Constrictor*, of which the writer was an eye-witness, for the *Annamese* are gross feeders, and their stomach refuses nothing but *beef*; dogs, rats, and several species of *lizards* are even eaten. The *Tunkinese* excel in rearing the *silkworm*, though the silk is far inferior to the Chinese in staple and gloss, on account of the bad management of the skein; still, formerly, it fetched a very fair price in the markets of Japan and Europe.

The *Geological formation* of *Cochin-China* is *primitive*; the mountains are composed of *granite* and *syenite*. A small quantity of *limestone* here and there occurs; whilst several hills consist of *quartz*. Of the *white marble* with *blue streaks*, near *Tinan*, we have before spoken. *Tunkin*, however, possesses this rock in higher perfection and beauty; great masses of it are found near *Chutham*, with extensive subterraneous caverns, some filled with water, and communicating with each other, so that boats can traverse them. *Tunkin* is the only part of the empire which affords the precious metal.

The richest *gold mines* are in the direction of *Yunnan*, on the same ridge of hills as those of *Makoo* and *Mauso*, which are worked under the influence of the Chinese government. The prevailing population here consists of *Laos*, but there are also a few *Tunkinese*. Gold is found amongst sterile and almost inaccessible mountains, but in large quantities, so as to remunerate the labour. Were the Government not too rapacious and ignorant, the amount of it might be increased ten times. At the present day the *Laos* export the greater part to *China*

clandestinely, to avoid the heavy tax. The silver-mines near Shih-la and Nunganchow (both Chinese frontier towns, the latter in lat. $24^{\circ} 58'$, long. $101^{\circ} 41'$), as well as those in the neighbourhood of Malung, are very rich, and are worked with much spirit. We are not able to give the details of the mining carried on there, but more than one hundred thousand labourers are daily employed in the bowels of the earth. The mountaineer Laos also engage here most extensively in these pursuits; and being very hardy, no better men could possibly be found for this purpose. The region itself is very barren and devoid of interest. The annual quantity of bullion derived by Government from these works is not much below one million of taels. Of the *iron-works*, which are likewise met with here, we could not collect any information; the produce, however, is scarcely sufficient to supply the native smiths. Cochin-China, as well as Kambodia, are nearly destitute of all metals, and if any exist there, they have not yet been brought to light.

History.—The history of Kambodia of which native records exist, commences with the introduction of Buddhism about two centuries after our era, though the date is erroneously placed much anterior. Before this, the inhabitants seem to have led a roving life, like some Laos tribes of the present day, and not united in forming a state. The propagation of this superstition took place previous to its acceptance in Siam, and the Kambodians glory in having given civilization to that country. At a very early period they invented a beautiful alphabet in imitation of the Pali, and composed many books. Amongst these there are historical legends, mere transcripts of those received from India, repeating the same stories of giants and hobgoblins, genii and spirits, which disfigure those Eastern tales. The commencement of their annals is founded upon these absurdities; and celestial beings, as in Japan, are said to have first obtained the sway over their country.

The invasion of the *Chinese* during the time of the Han dynasty was also felt here, and many adventurers of that army reached this remote spot. Both the language, which received several technical words from the Chinese, as well as the government and manners, were most essentially affected by this event; yet, long before a soldier had reached this country, the Chinese merchant had visited its coast. The great veneration we feel for the Tyrians, we may safely extend to the Chinese of remote antiquity, who were just as adventurous, and sailed along the shores of southern Asia, until they reached Ceylon, and even the gulf of Persia. In Kambodia they found productions much valued in their own country, and established

there a profitable market, as the rude inhabitants knew not how to prepare manufactures, with which their own country abounded; and they handsomely paid for the raw produce. We should wish to have some particulars of this early commercial intercourse, but though the Chinese annals are very bulky, they love to dwell on the most trivial actions of princes, and the fortunes of worthless favourites, considering national development and resources far below their notice. The history of the Kambodians themselves is too much taken up with the puerile acts of the king, and the capture of a white monkey or elephant, and consequently finds no place for indicating the state of commerce.

The name of this country (Chen-la) officially occurs in Chinese history for the first time in A.D. 618. Under the Tsin and Han dynasties the power of the Chinese was successfully exerted over all south-eastern Asia. Hence, the desire of the smaller states to pay tribute to the Great Emperor, and to avert, by this homage, the crushing influence of China's vast power. All the princes who did so, shared in the Imperial benevolence, and the tribute-bearers obtained exemption from all duties; so that they appeared at the capital as mercantile diplomatists, who often realized much money by their show of fealty. These voyages being profitable, became frequent, and even distant Sumatra and various other islands of the Archipelago sent envoys to prostrate themselves before the dragon's throne. Kambodia did so most particularly under the Tang dynasty, another race of powerful rulers, who for long ruled eastern Asia. It was at that time a very flourishing state, with a large capital, wherein all the riches of the country were squandered in order to make it a fairy-land, and confer on the king the appearance of a superhuman being. Ivory and gold were most profusely applied to walls, seats, and gates, to enhance the beauty of magnificent buildings, where the court gave audience. The royal residence was situated on one of the branches of the river, and contained above 20,000 houses; and there were 30 cities more, each having 1000. This proves that the country was then more thickly inhabited and in a more flourishing condition than even at present. It appears, however, to have been tributary to Tunkin, the more civilized neighbour, in the eighth century; and it was divided into *Low* and *High Kambodia*—a very natural partition. The connexion with China was continued. About this time occur several wars with the Siamese and Laos, too uninteresting to be related, in which the former, according to their own account, gained the advantage. Kambodia was at that time by far the most civilized portion of the southern peninsula. The natives had

acquired considerable skill in working metals, leaving, however, trade and navigation to foreigners. The kingdom reached in the twelfth century the highest state of civilization and wealth; so that its riches became quite a proverb. The capital had increased to a very great extent, being then the largest city in all these regions. "The walls," as the native historian says, "were built by *angels*, for no mortal could ever produce any thing similar." They still stand a monument of the skill and architecture of ages long passed away.

Such a country naturally attracted the attention of the Monguls, and *Kublai* entertained the intention of subjecting it, with the whole peninsula, to his sway. Death, however, prevented the execution of his design; and his successor, *Ching-tsong*, sent in 1245 an ambassador to feel his way. This grandee appears to have been fond of observation, and he carefully noted down what he saw and heard. He gives to the country the name of *Kamphuche*, which is analogous to the native term, and speaks of the royal residence, *Poutaipret*, its five double gates, immense numbers of idols, and vast display of gold. The king seems to have covered himself with gold, pearls, and diamonds, to astonish the Celestial ambassador. But this functionary speaks by no means highly of the natives, whose dark-brown tint, coarse manners, early marriages, and low condition disgusted him. He found many of the most fertile spots on the river entirely uncultivated, and overgrown with a thick jungle, frequently liable to inundation, so that even the trees were covered; the very state in which we see them up to this moment. The productions were the same at that time as they are now: but the country was then far more extensive, 90 districts belonging to it. It had proved victorious in its wars with Siam and Cochin-China, and spread its dominion over the Laos to the frontiers of Tunkin. The immigration of the Chinese appears at that time to have been considerable; in addition to merchants, many colonists possessed tracts of ground, and numerous vagabonds found there an asylum. Whether many returned home, we are not told. It is, indeed, remarkable, that the marriages entered into with native women by the Chinese in the first generation were fruitful, but they gradually became unprolific, and in the fifth generation barren. Of this the writer has seen many instances, but is not able to account for such degeneration between nations in other respects so similar both in their physical conformation and habits of life. Were it otherwise, the Chinese race would become the predominant one, and in a few centuries supersede the aborigines. Such has, however, not been the case, and the numberless immigrants, who con-

stantly pour into these countries, gradually disappear amongst a scattered population.

Siam about this time acknowledged the ascendancy of Kambodia, and became tributary. The country continued successful towards its neighbours even until the middle of the sixteenth century. The Ming dynasty cultivated friendship with this power, and sent rich presents by the Kambodian tribute-bearer, who had laid down the produce of his country before the imperial throne. All Chinese emigrants were henceforth to be furnished with passes by the home government, and none without them were allowed to settle in Kambodia. At a later period, this land owned the Cochín-Chinese sway, was unsuccessful against the Siamese, and reduced to its natural boundaries. It kept up some connexion with Manila, and received an embassy from the early Spanish settlers. The Portuguese found their way likewise to these regions, and traded uninterruptedly for several centuries, principally from Macao. The Dutch maintained for some time a factory at *Pontaipret*, and penetrated from hence into the Laos country; and also the English commenced a trade, which was but of short duration. The inhabitants did not improve by so much foreign intercourse. The kings were too fond of war, and had constant quarrels with the Siamese, which are most minutely detailed in their annals. The forced labour to which every male was doomed, if not for six months at least for four, greatly hindered industry and enterprise; also national wealth and prosperity being concentrated in the person of the king, sank with him, when any unforeseen calamity occurred. In 1750 the Annamese took permanent possession of all the territory round Saigon (*Ghiadingh*). The greatest misfortune, indeed, which could have befallen the country, was the death of king Ongtong in 1785. Throughout Cochín-China anarchy reigned at that time, and to preserve the heir of the throne, a mere child, he was sent with his brother to Bangkok, in charge of the king of Siam, whilst the son-in-law of the late sovereign became regent. In the meanwhile the Siamese tried with all their might to possess themselves of the country, over which their prince had assumed the guardianship. The presumptive heir did therefore not return, after having reached maturity. His cousin conceived it on that account expedient to assume the sceptre and proclaim himself sovereign in 1809. The Annamese espoused his cause, whilst the Siamese defended the legitimate successor. Both parties met near a ridge of mountains which form the boundary of Siam. The Siamese considered it by no means prudent to fight against an enemy drilled in the European manner and far superior in

numbers, with the greater part of the country in his possession. The Annamese, on their part, thought it absurd to enter into a contest for what was really their own already, and thus the diplomatists of both realms deemed it wise to conclude a treaty, according to which each retained what he had conquered. The western province, Battabang, fell to the share of the Siamese, the remainder of the kingdom to Annam, and both established an iron rule over the natives. Whilst the Cochin-Chinese kept nominally the king on the throne, they seized upon all the branches of administration, treating the natives as inferior beings; and the court of Bangkok kept the two princes in honourable exile. The writer has often seen and conversed with them. The youngest possesses an intelligent mind, is fond of painting and mechanics; the eldest, who ought to have been king, speaks very little, and exhibits no great talent. The Siamese often tried to stir up rebellion, and expel the Annamese by means of these pledges, but have never succeeded; the latter always adopting a defensive line of policy and never becoming aggressive. Kambodia, in fact, remains an object of animosity between the two nations, and the Siamese invade it periodically, to kidnap the natives beyond the mountains, and make them slaves, or entice them to abandon their own government and settle in their territory. Kambodia is now virtually blotted from the map of Asia, and the inhabitants suffer from twofold slavery, being the slaves of slaves.

Tunkin.—The first Chinese settlers seem to have reached this country about 250 B.C., when the powerful Chehwangte rendered the Chinese arms formidable throughout eastern Asia. Of the gradual progress of their settlements, and of the aborigines who previously occupied the country, history records nothing; but the progress must have been rapid, for a century had scarcely elapsed when the celebrated Woote, of the Han dynasty, divided the country (called by him *Keaouche*, giving rise perhaps to the term *Cochin-China*, from a custom prevalent amongst the natives of putting their toes one on another) into three parts; the one embracing the present Tunkin, the other part of the coast and northern Cochin-China, and the third the southern districts to lat. 15°, incorporating the whole with the Chinese Empire.

About three centuries thus elapsed, during which the national resources were developed, and the people grew in wealth and civilization, the Chinese immigrants increasing tenfold. At the fall of the Han line of princes, and the subsequent anarchy in China, Tunkin seems to have had its own rulers, sharing in the same revolutions and great changes of that time, and be-

coming eventually subject to the kings of Yunnan. This part of the history is, however, very uncertain, and the annals are confused. Some connexion with China was again commenced during the vigorous administration of the Tang princes; when they became extinct Tunkin chose its own king (in 907) in Ting, a usurper. To pacify the Chinese court for his daring, he acknowledged himself a humble vassal, and received the title of *Keun-wang* (a king of the second degree). One of his successors, seeing the Sung emperors fully employed on the northern frontiers against the Tartars, invaded Kwang-se in 1075, and laid waste the Chinese territory with fire and sword. A general of the latter revenged this insult, and penetrated to the *Sung-ka* (Füh-leang in the annals), spreading devastation everywhere. Both parties, therefore, deemed it most advantageous to conclude peace, and Lekeëtso was confirmed king of *Annam* (in Chinese *Gannan*, the pacified south). In these wars, of which several Chinese writers have preserved interesting accounts, young females, not unlike the Maid of Orleans, distinguished themselves by their heroic conduct, and were, consequently, considered by the Chinese as sorceresses.

The *Monguls*, an otherwise very barbarous tribe, seem to have cultivated geography, on purpose to extend their conquests. Scarcely had Kublai ascended the throne of China (1279), when, on hearing of the fertile regions of the south, he resolved to conquer them. To facilitate this enterprise, ambassadors had first to gain information and to pave the way. He himself had previously made a campaign into Yunnan, and thence attacked Birmah. His companions in arms could well endure the cold and fatigues of a Russian winter, but were unable to resist the effects of a tropical heat; scarcely a hundredth part returned to tell the tale of the enervating effects of the climate upon their frames. In nowise daunted by ill success, a new army, easily procured in the extensive steppes of central Asia, poured forth, and took possession of the capital of Tunkin. Their objects at this time appeared only plunder and destruction; and after having obliterated the industry of ages, and slaughtered with unexampled cruelty the inoffensive natives, they were forced to retrace their steps, on account of the epidemical diseases which thinned their ranks. Kublai seems then to have resolved upon the subjugation of the country by means of diplomacy. A distinguished and astute agent appeared at the court of the Tunkin king, laid an enormous tribute of gold, ivory, &c. on the country, stipulated the sending of distinguished doctors, mathematicians, and merchants to the Chinese capital—a circumstance which proves indirectly the flourishing and somewhat advanced state of the country—

and appointed a permanent resident to take care of the interests of the conqueror. The poor king on hearing of these conditions died of fear. His son, Chinge-heuen, perceived that nothing could be gained by submission, and resolved to oppose the enemy. Whilst Kublai considered all southern Asia in his grasp, and his power secured by the above-mentioned treaty, he sent a well-appointed army to take possession of Cochin-China, and thence proceed further south along the coast. Chinge-heuen waited until they were enfeebled by a disastrous march through jungles and swamps, and then successfully attacked them from an ambush. They fled with consternation, and the whole army was nearly annihilated in piecemeal. Such a disgrace could only be wiped out with blood. The bravest troops assembled in Yun-nan to exterminate the resisting Tunkinese. Certain of victory, they neglected all precautions, and when issuing out of the mountain defiles, they were cut up in detail; and the rest of the army, approaching the plains of Tunkin, the cholera made dreadful havoc with it. The Tunkinese perceiving that the Monguls were not invincible, fell upon them with all their might. The few who found their way back, related their misfortunes to the Emperor, and irritated him to such a degree, that he instantly sent a more numerous host. These men fared worse, and the valour of the Tunkinese greatly increased every day. A third campaign convinced the unbending Kublai that his bounds of conquest were restricted by the climate; he was grateful for the humanity shown towards the Tartar prisoners; and, on these being sent back, he granted peace under the promise of a small annual tribute and nominal subjection.

The Tunkinese national spirit was by this effectual resistance greatly raised; the most powerful kingdoms had submitted to the unconquerable Tartar invaders, and this insignificant state successfully repelled their encroachments. The independence of the country therefore lasted till the reign of *Yung-lo* of the Ming dynasty (1403-1424). Then, indeed, a civil war arose; the meritorious Chin, in whose hands the administration had for a long time flourished, was dethroned by an usurper. *Yung-lo* was requested to restore the rightful heir: a numerous Chinese army thereupon invaded the country, and was gladly received by the adherents of the o'd reign. The rebel was defeated and slain, but the nation had to pay dearly for assistance. Under the plea that none of the rightful princes could be found, *Yung-lo* changed the whole country into a Chinese province, under the rule of a Governor. In many respects this proved advantageous to the people, who were thereby brought into closer contact with Chinese civilization, and its systematical

government. The result of a census gave 3,120,000 families, which, allowing five persons for each, give a population of 15,600,000, a number too large, unless Cochin-China and the adjacent Laos were included. From that time the construction of a map, on the principles and plan of Mongul surveyors also dates, with many other useful institutions; and the Tunkinese youths visited Peking to improve their manners and learning.

The people, however, could not brook foreign dominion, and the rule of Chinese mandarins did not conciliate the affections of the subjugated. Le, a bold partisan, roused the patriotism of his countrymen, and supported by the Laos and Cochin-Chinese, who dreaded a similar yoke, he overthrew, after a long struggle, the Chinese government. His measures were so effective, that no effort was subsequently made to hurl him from the throne. His son and successor, *Le-haou*, tried his ambitious spirit in an attack upon the peaceful Laos. Their king was defeated, the capital ravaged, and the country rendered a desert. This predatory excursion was indeed repulsed by a prince whose family had been sufferers, and *Le-haou* returned to maintain his ascendancy over Cochin-China, which the Chinese attacked. On this occasion a large fleet from Malacca, in the heydays of Malayan influence, came to the assistance of the former, and forced the sons of Han from the shores of Annam.

We know nothing of the foreign intercourse during this time, but the very fact that a fleet of Malay prows, sufficient in number to cope with the Imperial navy, lay in the harbours, proves some connexion with the Archipelago. There was no doubt all along a regular trade to the straits, but the Tunkinese do not appear to have themselves gone to sea; leaving this to the more enterprising nations of Asia, they were satisfied to sell their goods to their countrymen, in which their women took an active part.

The Portuguese — the pioneers of Eastern navigation — reached this country at a very early period. They established a factory at the capital, and endeavoured to influence the government: but they never gained any territorial acquisition. In 1550 new troubles arose, and violent parties divided the country. *Kea-tsing* reigned then over China; he was by no means slow to avail himself of this favourable opportunity to render Tunkin tributary to his sway. Though the Chinese were successful in the commencement, the inhabitants bore too great a hatred against them, and very soon expelled the invaders.

An enterprising Minister guided at that time the helm of state; his merits were great, and he therefore received the title of lord (*Chua*), which became with the office hereditary in

his family, whilst the king was called Vua (*Dora Bora*). The former, uniting intrigue with real power, kept for many generations the Vua in thralldom; and the actual ruler retained the mere shadow of his power. As the country remained tranquil, the nation increased in riches. and the Dutch found it advantageous to establish a factory near the capital. At this time falls the flourishing trade with Japan, then the most enterprising maritime nation in all Asia; and the frequent intercourse with Macao by means of the numerous ships of the Portuguese is arrested.

We have now reached the period when the Vua recovered his legitimate authority (1748), and for ever expelled the domineering major domo. The Tunkin government as much as possible discouraged, from motives of a paltry policy, all intercourse with foreigners. It was impossible to drive them away by main force, but easy to destroy their trade by heavy duties and burthens. In this their mandarins fully succeeded; and since the middle of last century not a single foreign ship has entered. The trade had never been very profitable; but as long as China refused commercial dealings on a large scale, Tunkin offered raw silk on advantageous terms for the Japan market. That advantage was finally merged by opening Canton; and none complained of the lost intercourse with Tunkin. The few Chinese junks which continued to visit the river were rendered harmless by fiscal regulations, and the nation turned its whole attention to internal broils. The history of this country becomes henceforth blended with that of *Annam*, and we must therefore retrace our steps to relate the events that took place in that country.

Cochin-China, comprising only a narrow strip of land along the sea-coast, could never become a powerful state if it did not take advantage of its maritime position. Here civilization was subsequent to that of Tunkin, and partly commenced by the sword, during the time of the *Han* dynasty. *Mayuen*, the celebrated conqueror of the South, not satisfied with having planted those brass pillars which were for ever to form the boundary, marched in the full career of victory farther south. There he met with thick forests, and almost insurmountable obstacles. Not regarding these, he caused the axe and fire to smooth the way, and all the country to lat. 15° was thus rendered tributary to China. Its manners, literature, principles, government, &c., were thus faithfully grafted on *Annam*. So distant a possession, being frequently under the influence of grasping mandarins, did not long remain loyal; for in A.D. 263, *Kooleën*, a daring chief, declared his country free. The *Han* had ceased to reign, and China was just then in a state of anarchy.

We may therefore consider *Kooleèn* as the founder of the kingdom. After him rose a number of petty chiefs, mere vassals of China, who regularly paid their tribute. Thus they might have remained undisturbed from the north, if China had not produced an Emperor in many respects resembling Louis XIV. of France, in *Yangte*, of the Suy race, A.D. 605—617. He was fond of splendour, luxury, and martial glory, and soon exhausted his treasury, which, notwithstanding the use of every expedient, could not be replenished. Now he had heard of golden mountains in the south, of India's treasures, and forthwith resolved to possess himself of them. The Chinese intruders reached the country, stripped the ancestral temples of the little gold they contained, destroyed the capital, and returned disappointed with their booty. The country, which had hitherto bore the name of *Liné*, was henceforth called, from its new capital, *Chenching*. From this time until 1166 we know little of the events which occurred; a very intelligent sovereign then ascended the throne, and his first endeavour was to open a commercial intercourse with *Haenan*. His merchants finding there very little favour, were expelled from the harbours under the ignominious accusation of having been pirates. No doubt can therefore exist but the *Annamese* were then engaged in navigation, and very probably brought from the south the productions so much desired in China. They had access to the harbours on the main, for allusion is made to their ships periodically visiting the port of Amoy. The king thus frustrated in his benevolent intentions, all at once endeavoured to obtain glory by war, and for that purpose attacked Kambodia by water and land. A very disastrous struggle ensued, in which the Cochin-Chinese, after heavy losses, proved ultimately the victors.

The accession of *Kublai* to the Chinese throne was greeted by the Annam king with assurances of entire submission. The Khan understood the compliment literally, and forthwith dispatched a grandee with a very strong guard to maintain his authority. The officer arrived by sea, and endeavoured to exterminate the last adherents of the Sung princes. These being everywhere hunted down, sought finally refuge in these remote regions. The retinue of the officer was too small to realize all the expectations of his sovereign, and he preferred leaving a country to becoming an object of public violence. The Mongul army about to invade Cochin-China by land was defeated by the Tunkinese. Kublai therefore fitted out a splendid fleet, which reached its destination, and laid waste the capital. But the inhabitants, no wise daunted, fled to the mountains, and thence maintained a party warfare, which re-

duced the Monguls in number, and rendered large reinforcements necessary. Kublai's death put an end to those enterprises, and the Cochin-Chinese gloried in their strength, of which they had for the first time made a trial.

The accession of the Ming dynasty was hailed with joy, and rich presents of odoriferous woods accompanied the tribute-bearer, the servant of a tyrannical king. He had a considerable navy, and professed to have taken twenty piratical junks, which no doubt were traders that had approached too near his ports.

The feuds with Tunkin had been of a long standing. Both countries preferred their complaints to China, and many a high mandarin enriched himself on being appointed umpire. Still the causes of jealousy were never removed, and a border war was from time to time waged with great ferocity between two nations so similar in every respect. The Tunkinese had in these struggles the advantage of numbers; the Cochin-Chinese, of daring. But the former being in possession of many resources, finally gained a complete victory (1471), and Cochin-China from that moment became tributary. The attention of the king was henceforth directed to internal improvements, and wars with the Kambodians. The strife of parties and the intrigues of the court form no edifying part of their history. Their name was scarcely known beyond the confines of their own territory. During short intervals their independence was asserted, and again lost.

In the middle of the last century *Tso-tsoi* (the name of his reign was Kaung-shung) sat on the throne. He was an effeminate prince, who, priding himself on the eastern part of Kambodia being permanently attached to his empire, indulged in all the debaucheries of an Eastern court, and appointed eunuchs as rulers. The imposts levied on the nation were very heavy, and the tyranny of the officers exceeded all bounds. The immediate consequences were general poverty and wretchedness, which led to subsequent resistance; and the people, driven to despair, joyfully rallied around three brothers, known under the name of *Ty-son* (western mountaineers) at Quinhon. What profession these men had at first is not known: but some record them to have been merchants and priests; others artisans and agriculturists: they followed perhaps more than one calling. Small was their band when they first became known as robbers, and were proclaimed outlaws. Despair, however, drove the boldest to their standards, and in a short time they ventured to face the royal army. The Tunkin king had in the meanwhile been called upon as liege-lord to settle matters, and appeared in full array on the frontiers.

Voo-tsoi by this time had already suffered a total defeat by the rebels, and lost his crown and life; his army dispersed, or enlisted under the Ty-sons, and only his consort escaped with his second son (the eldest being killed in battle), to regain at a more fortunate day the royal diadem. Nhak, the leading man of the trio, instantly resolved to push the victory; and routing the Tunkinese, took possession of the country. The king, driven to the greatest straits, applied to Keenlung, Emperor of China, a warlike monarch, who from his palace dictated orders and sent behests, and without ever entering upon a single campaign, had proved victorious in Turkestan and Sungaria. To increase the splendour of his reign, he took up the case of the defeated Tunkinese king in full earnest, probably with some desire of conquest, and dispatched a large army to the south. Chinese soldiers are excellent as an armed police, but in war worse than useless. It is said that 100,000 men—a number greatly overrated—marched into Tunkin, and falling into marshes and jungle, they were attacked by epidemic diseases, and then on all sides beaten by *Nhak*. Small was the number of those who escaped the slaughter. Up to this day the inhabitants glory in this feat of valour, though the victory was gained by a rebel, for their countrymen overcame the proud Chinese. The Great Emperor, at first so desirous to interfere, hesitated not a moment in acknowledging the victor as king, who forthwith took the name of *Lung-neang* for his reign, and considered himself the rightful possessor of the realm. An attempt upon Saigon proved equally successful; so that the new usurper believed himself permanently established in his dominions. The cruelty exercised by the army under his command in every excursion beggars all description.

The widow-queen in the meanwhile fled to the south. Her son, even as a boy, betraying precocious talent, took the most lively interest in all her proceedings. Meeting at Saigon several Portuguese and one French vessel, she engaged these in her cause, and attacked the Ty-sons in their stronghold at Quinhon (1781). Her foreign auxiliaries appear not to have been faithful in her behalf, and previous to having effected anything, they retired before a barbarian enemy. The young king now took refuge in the island *Phu-koh*, where a number of his faithful servants flocked around him. But apprehending an unexpected descent of the Ty-sons, he went to Siam, and serving there for several years in the army against the Birmans, performed many heroic actions. The assistance craved was not accorded; the King of Siam offended the Cochinese prince by disgraceful demands; and so this

spirited adventurer left the court to seek again his fortune in the island of Phu-kok.

Gea-long—the name which his reign subsequently bore—was a man of a strong mind, well aware of the great superiority of Europeans, and the sincere admirer of their ascendancy. Amongst the missionaries was at that time Bishop Adran, a Frenchman (some say a Belgian), called Behaim Pigneaux, a man of a great mind in worldly matters, and sincerely desirous to assist the exiled family. To him *Gea-long* intrusted his son to proceed directly to France, and procure assistance there. Adran, quick in obeying these directions, concluded a most favourable treaty for his nation, involving the cession of the territory near Turan Bay. (with many other political advantages, which would have made the French masters of the country.) on condition that they should furnish an effective naval and land force for reconquering the lost kingdom for its sovereign. The Governor of Pondicherry, intrusted with part of the execution of the plan, was by no means zealous; the revolution intervened, and all the fruits obtained were confined to the enlistment of some adventurous French officers, who served the king with great fidelity.

Adran remained the guide of the prince for several years, and in joy or sufferings never left him. The first attempt being made on Saigon, the city was recaptured in a short time. The rebel who had obtained from the Chinese the recognition as Emperor died in 1792. His son was only 12 years old; and the uncles, who had done so much for establishing the kingdom, were anxious to seize themselves upon the government,—a circumstance which operated most advantageously for the plans of *Gea-long*. In the same year the latter met *Nhak's* fleet, and obtained a complete victory, reconquering *Quinhon*. In all the enterprises he showed himself the foremost, but nevertheless patiently listened to the advice of his foreign companions. His victories now constantly increased; in 1802 he overcame the third brother of the *Ty-sons*; and the heir of the crown being still young, *Tunkin* bowed likewise to his sway. To heal the wounds which a disastrous war and anarchy of 28 years' duration had inflicted upon the country was no easy matter. Few kings, however, had so great a minister as Adran, both in the camp and cabinet. The army and navy were organized by Europeans; the fortresses laid out according to the most scientific plans; the whole system of government modelled according to that of France; manufactures and plantations promoted, and other benefits created. *Gea-long* refused not only to acknowledge fealty to the Chinese throne, but even threatened the empire with an invasion. Feared

and revered by his people, he was the first great prince that reigned over Cochin-China.

Affairs would probably have taken quite a different course if the French Revolution had not intervened. This Gea-long fortunately escaped, and he annexed, as already related, in 1809, Kambodia to his country. On the pinnacle of glory, however, when he had lost his Mentor, he changed for the worse, and with undeviating rigour pursued the system of concentrating everything in the Government. The nation was to him nothing: he even went so far as to acknowledge that by impoverishing the people the State was most secure against rebellion. With all this civilization, such as no other Asiatic country could show, the people remained in absolute want, and industry was strangled in its very cradle.

The heir of the crown had embraced Romanism, and died; and Gea-long's successor was Mingh-mang (the name of the reign, *illustrious destiny*), in 1819. He never understood the institutions of his father, yet was by no means willing to break all at once with the French. To show his desire of maintaining the previous good understanding, he sent a number of presents and a florid letter to Lewis XVIII. Although he let the improvements continue, he wished to impress on his officers that he intended to revert to Chinese forms, and entirely to tread in the steps of his ancestors. For this purpose he proceeded to the northern frontiers, to undergo the humiliating ceremony of receiving the investiture of his kingdom from a Chinese mandarin in the name of the Emperor, and sent from time to time tribute-bearers to the capital. When the French, in his father's time, dispatched an envoy to insist upon the performance of the treaty concluded through Adran, he most politely refused such a request, would not even see the negotiator, and thus dropped the matter altogether. Mingh-mang went farther, and dismissed one officer after the other, belonging to that nation. The French trade was gradually likewise very much reduced by most obnoxious measures, and French influence a few years after his accession finally ceased. The presence of the British envoy *Crawford*, in 1823, to whom we owe the best description of the country, effected no change. The most liberal promises of trade were never realized; a ship, which wanted to buy a cargo of sugar, could not procure a single pecul; and some Americans who made a similar attempt fared worse, and had to suffer many extortions. The king, on the contrary, did everything in his power to monopolize the principal articles; his men-of-war, either built entirely on a European model, or half-junk and half-ship, were turned into traders, and visited as such

periodically Singapore, Canton, and even Calcutta. The naval mandarins became merchants, and Mingh-mang, whilst reaping gain from these voyages (for sugar and other articles cost him nothing, being produced by forced labour), realized much money. Amongst the orders sent were steamboats and some scientific works, which showed that the spirit of research and improvement was not yet entirely extinct, though languishing. The king had only one idea, which was egotism; and the most crying extortions were exercised to fill his coffers and satisfy his whims. Most serious rebellions therefore arose in various parts of the country, in Kambodia and Tunkin, which were put down with great cruelty; he did not, under such circumstances, consider it advisable to punish the Siamese, who most wantonly provoked a war. When the King of Birmah sent a messenger to suggest joint operations against the Siamese and the opening of intercourse through the Laos country, Mingh-mang refused both, and was glad to have done so, because the former power was soon engaged in a destructive war with England. Foreign trade being nearly annihilated, with the exception of the Chinese, the anti-national system, formerly upheld by Tunkin, was re-introduced.

Mingh mang died in 1841, in the 21st year of his reign, and 50 years of age, and Thieu-tree succeeded him. This monarch has carried the desire of realizing the Chinese system to the fullest extent into effect; his installation, his humble submission to the Celestial dynasty, and his magnificent embassy to the court of Peking, sufficiently prove that he has reverted to ancient custom. The royal monopoly is in all its vigour; and some mandarins, who were sent to Canton to make purchases, not succeeding in accomplishing the wishes of their sovereign, have received most severe corporal punishment.

For a long while some coolness existed between the French and Cochin-Chinese; the former expected that the favourable change in foreign relations which had occurred in China would produce something similar in Annam. They at least insisted upon the free exercise of Romanism, which had hitherto been most cruelly persecuted. The answer was delayed, and two frigates sailed to Turan Bay in the spring of 1847, to obtain a decisive reply; this appears to have been refused, and some preparations were likewise made on the part of the Annamese to repel the foreigners. The French, however, did not wait for this, but, having received some intimation of a sinister design against them, they attacked the Cochin-Chinese war-vessels in the bay: one was sunk, another blown up, a third burnt, and two others which had hoisted a flag of truce were, after the

engagement, set on fire. The loss of the Annamese appears to have been above 1000 men. This is the first instance of hostility between this country and foreigners from the west: the attack on the British agent in Huë River during the disturbances in 1776 not deserving that name. The king, indignant at this untoward event, gave immediate orders for surrounding the anchorage with fortifications, and hundreds of labourers proceeded to the spot to carry on the work; yet the enterprise was not finished when Sir John Davis arrived in October, 1847, as British Envoy, to conclude a treaty of peace and commerce. His reception was cordial and hospitable, but the king refused to give an audience. Here we conclude the historical sketch of this country, and now turn our attention to the *inhabitants*.

The *Cochin-Chinese*, as well as the *Tunkinese*, are a race of small stature, with great agility of frame, not very dark, and forming in their features the link between the Malays and Chinese. The women excel in the symmetry of their form, fine eyes, and beautiful jet-black hair; the men in their muscular strength, so disproportionate to their diminutive frames. The dress of both sexes is becoming, and nearly alike: consisting of trowsers and a coat reaching to the ankles with women; with workmen only to the knees; but ceremonial costume is always long. Those who can afford it wear several dresses over each other, and it is a mark of distinction and wealth to do so; the uppermost is invariably of silk, black being the favourite colour, the underclothes are generally filthy and shabby. The men do not shave or cut the hair frequently, but tie it together in a knot, and wear a turban on the head of black and blue crape, the latter most frequently by the women, and in rainy weather sugar-loaf broad-brimmed hats. Those who lay a claim to gentility wear long sleeves and nails; most people go barefoot; the higher orders use slippers, fishermen and the lowest working classes are not unfrequently seen naked in hot weather, as in Japan. Ornaments, such as bracelets, &c., are sparingly worn by the women.

Their principal food is fish and rice; they are very gross feeders, their stomach refusing nothing—not even putrid meat or vermin. To all the produce of the cow they have a settled aversion; their meals are generally sparing, consisting of the cheapest condiments, with balachary and similar preparations to season the rice; at festivals they indulge in many dishes, the most delicious of which are hatched chickens in the egg, and are fond of presenting the meat on the table in the forms of animals. They are a nation that with little sustenance can bear great fatigue, and are fond of liquor of every description,

drunkenness not being considered a vice. Their dwellings much resemble the Chinese, but are inferior: a great part of the nation living in mud or bamboo huts, with straw roofs, low and uncomfortable; these remain in a state of filth, without either sweeping or cleaning.

The *Annamese* are a cheerful race of people. The author has lived amongst various tribes of Asiatics, but he has never found such friendly companions as they are: so free and unsophisticated, so ready to oblige, so open and kind; yet they are fickle and restless in their disposition, subject to sudden impulses, and not faithful to their promises. The higher classes, and especially the *mandarins*, imitate the Chinese in their grave behaviour, and with them mirth is a crime.

The females predominate in number; they do not live secluded, but carry on all crafts and professions, enter on commerce, plough the ground, and perform all the labour of the men, whose services belong to the king. A Cochin-Chinese wife is a helpmate indeed, and often maintains her husband. Marriages amongst the mass of the people are not entered upon before twenty years of age, amongst the higher classes earlier; the wife is a slave to her husband, and has scarcely any privileges. Though there are very severe laws against the breach of matrimonial fidelity, the Annamese are nevertheless in this respect very loose in their manners, and it is by no means a disgrace to a girl to have lost her virginity. It is an honour to have children, and in a country where they can be so easily fed families that have many consider themselves rich. All classes chew the *betel-nut*, and smoke incessantly; two bags that contain these necessities of life, with the money; are thrown, tied on strings, over the shoulder, and denote a certain degree of respectability, only that they cannot be worn in the presence of higher personages.

The system of slavery which the Government has enforced on the nation has much debased the character. Every male belongs to the king, and must either enlist in the army or work one-third, if not one-half, of the year for the sovereign without pay; this produces a spirit of listless indifference in regard to property, and the heavy and inhuman punishments inflicted often for the most trivial faults, renders the heart callous and the character cringing. The nation is debased by a consistent system of tyranny, which incessantly grinds it down, and reduces the people to poverty and wretchedness.

The doctrines of Buddha are *pro forma* professed by a very few; the mass does not care for supernatural worship, and is subject to the most abject superstition. The Annamese may be said to be far more irreligious than even the Chinese;

with few temples, still fewer priests, mendicants by profession, and differing little from the Bonzes of China; the mandarins naturally profess a deep veneration for the doctrines of Kung-foot-sze, and thus despise religion altogether as gross superstition. The veneration for the departed dead is general, and the temples containing their tablets are the most sacred spots of worship.

The *language* of Annam shows a great mass of monosyllabic words, originally used by the aborigines, on which the Chinese was grafted and so thoroughly amalgamated as to constitute one whole. There are sounds which are not met with in any of the numerous dialects of the Celestial Empire, and which the Chinese cannot even pronounce: such as *ra*, *roi*, *rum*, *trang*, *krang*, &c.; *truong*, *glory*; *doam phuok*, *fortune*; *rauri*, *anger*; &c. The language is by no means mellifluous, and is spoken with extraordinary rapidity by the natives. For many ideas there are Chinese and aboriginal words, as with us Latin and Saxon; the Chinese is more in use with the higher classes, who pride themselves on their learning in that tongue. For abstract subjects the Chinese alone stands, but all ordinary things in life have names originally derived from the language of the aborigines.

The language has no inflection whatsoever, for the genitive not even a particle: this is indicated by position merely,—*sach konnit*, the child's book. All grammatical niceties are conveyed by particles, in which the language abounds, and which constitute the skeleton of the whole. The construction is natural and simple: inversion producing a change of the sense, whilst the once-constituted order leaves not the least ambiguity; the tones being so full that they can be distinctly conveyed by our letters, although the intonation can never be expressed, the Annamese adopted from their teachers the Chinese characters to write their ideas. Not yet satisfied with 30,000 symbols, for the acquisition of which a whole life scarcely proves sufficient, they moreover framed from these materials many others of their own, unintelligible to the Chinese, and confounded the meanings with each other. Thus the written medium became more difficult than even in China, and the acmé of perfection was sought in being able to draw and explain the greatest possible number of ideological signs. How much this retards the acquisition of real knowledge, when so many years are necessary merely to learn to read, need not to be stated; and the nation, as a whole, can only then rise in the scale of nations when a syllabary or *alphabet* is adopted; the lower classes have been forced to use this expedient, employing a small number of characters as a syllabary to convey sound,

not meaning, and thus express their ideas according to the ear. The attempt, however, is exceedingly clumsy, and the people are not agreed in the various provinces; so that this written medium presents a real Babel, whilst the professional *literati* look down upon it with the utmost contempt.

Annam has no literature of its own: whatever it possesses is Chinese, with its small range of ideas and stereotyped thoughts. The Annamese possess all the agricultural skill of the Chinese, their industry and perseverance, but are impeded in following out their desires by incessant calls on the part of Government for their gratuitous labour. There remain every year more than 100,000 peculs of *rice* for exportation; the cultivation of the sugar-cane, as well as the preparation of *sugar*, has of late years much improved, because this commodity furnished the best article for the royal monopoly; the Chinese at present engage, as also in Kambodia, in planting it, and the sugar vies now in goodness of quality with what comes from Siam. We do not think that the present exportations are below 70,000 peculs, a great part of which finds its way to the northern ports of China, but sells below the Formosa sugar. Cotton is of the best quality; and if we assign 60,000 peculs for exportation, principally to Canton, we shall not be very wrong. There is much *raw-silk*, principally for home consumption, produced; the Tunkinese are the best silk-cultivators, but have not yet learnt to adapt their staple to the foreign market. We do not believe that the whole exportation exceeds 1500 peculs per annum; much of this is resold at Canton to Parsee merchants, for the consumption of India. Amongst the staple articles cinnamon ranks very high, being universally used throughout China as an excellent specific in medicine. Including the coarser kinds the whole exportation amounts perhaps annually to 4000 peculs. In the southern parts the *cocoa-nut* grows very luxuriantly, and hence large exportation of the oil takes place. *Cardamoms* are another article of which China takes perhaps 1000 peculs per annum. Of *betel-nut* the junks take to the same country perhaps 30,000 peculs. The royal monopoly in *eagle-wood* is considerable, and an annual exportation of 300,000 dl. is not much under the mark; this must first be carefully pounded and prepared, and the quality is determined by the amount of *aromatic oil* it contains. The exportation of dye-woods is limited, owing to the want of enterprise on the part of the Kambodians.

Of *sticklac*, the product of an insect like the cochineal, and of gamboge, perhaps 50,000 dollars' worth are annually sold. Of the *Dioscorea alata*, spoken of before, the Tunkinese export at least 50,000 peculs. If the fisheries yield

100,000 dollars for exportation, after supplying the large consumption of the people at home, we may form some idea of this branch of industry. Annam and Kambodia export chiefly to China a larger quantity of ivory, elephants' hides and bones, as well as of rhinoceros' bones, than any other country.

The above is the raw produce prepared for the foreign market. The Annamese have not sufficient manufacturing skill to prepare any articles for foreign consumption; they weave their own cloth, which is homely enough, using also the stuffs of China, as well as, to a small extent, our woollens and calicoes, with the silks of the former country. Tunkin manufactures a kind of light summer cloth, which is so cheap that even the Chinese can export it thence at an advantageous rate. In all other articles for the convenience of life the Annamese are still children; the Tunkinese rank next to their masters the Chinese, and excel only in the preparation of lacquer-ware. There is a kind of durable silk stuff which the Kambodians prepare and also sell to the neighbouring nations. Whilst the mass of the nation still remains ignorant of manufacturing skill, the king has surrounded himself with the best artisans that can be procured. The men solely work as slaves for their master, often without the least remuneration; and hence it is very common that individuals who excel in their profession hide their superiority as much as possible, lest their art might be made tributary to the court.

Since the supreme government has monopolized all the branches of production and industry, the amount of trade on account of the king has very much increased, both to Canton as well as to Singapore: the establishment of this latter settlement has given great development to the Annam commerce in general, and the only manufacture of the south, viz., *salt*, has always found there a ready sale.

The principal foreign trade of Cochin-China is with the Chinese, the junks of whom repair to Saigon, Faifo, Hué, Kacho, and several of the minor harbours: the average number has been roughly rated at 300 small and large vessels, carrying from 150 to 6000 peculs. The general exports are those before mentioned; the imports are silk piece-goods of various descriptions, the coarser kinds of teas, and coarse china-ware, besides a great variety of Chinese manufacture, such as paper, cotton stuffs, &c., which are pretty generally consumed, whilst the junks from Singapore and other ports bring iron, opium, cotton manufactures, woollens, cutlery, &c.

The principal trade exists with the various emporiums of Haenan: the junks are very small that start from thence to Tunkin and Hué, as well as Faifo; they exchange home pro-

duce and export a great deal of rice: their number is never under 200, some of which make three voyages per annum, principally to Tunkin: the adjacent districts of Kwangtung likewise carry on a small coasting trade. The junks which have most valuable cargoes come from Canton both to Tunkin as well as to Cochin-China and Kambodia, but those of Teocheo (Chaouchoo) are more numerous, and their countrymen being the principal merchants, the trade is very profitable: there are a few from Amoy, and now and then a straggler from Shanghai. The Fokeën Chinese have, however, never been able to extend their trade materially: a number of vessels which load at Saigon annually visit Teëntsin, principally with *betel-nut*.

Of the internal trade to Kwangtung, Kwangse, and Yunnan, we know little, though mutual wants have created a considerable intercourse. In looking over the imports given in the Chinese custom-house book, we find a variety of provisions, such as rice, dried venison, stag-antlers, and especially salt-fish, drugs of various descriptions, incense, aromatic woods, betel-nut, the Chooleang, metals, and alum, verdigris, wax, varnish, timber, &c., which are imported from Tunkin, whilst China sends fans, caps, umbrellas, clothing, and a few piece-goods in exchange. Many of the goods thus obtained from Tunkin are again exported from Canton.

There is a little trade with the Laos in horses, elephants, ivory, rhinoceros'-horns, drugs, aromatics, silver and gold. Manufactures for clothing and domestic use are given in exchange by the Tunkinese, who realize often large profits with these simple people. The coasting trade with Siam in small miserable vessels, carried on by Kang Cao and Saigon, is very insignificant.

The internal trade is facilitated by canals and roads constructed, with an immense expense of human life, at the suggestion of the celebrated Adran. The oppressive measures of Government much hamper the native trader, for every vessel must take a quantity of public stores for nothing, and the extortions through a canal and sea-voyage are numerous.

Vessels trading to the Cochin-Chinese harbours pay a moderate measurement duty, which is lowest at Hué and highest at Saigon. Junks that come from Teochoo pay least of all, craft on imports nothing; on exports of luxuries 5 per cent., on timber, &c., 10 per cent. The state does not wish to profit by trade or to encourage it, being persuaded that it will prove ruinous in the end to the country.

Government casts cash in imitation of the Chinese, but of baser metal—*zink*, with the name of the reign on it, of which

600 pieces subdivided into decimals are put on a string called a *kuan*, which circulate at the rate of 5-6 times the actual value of the original cost. They are called dong (copper), and form the most objectionable monetary medium possible. The gold and silver pieces issued by Government are mostly of an oblong form, like Chinese ink: the largest piece of silver is named nen bak, and of gold nen vang, the gold one valuing 488 Company's rupees, the silver one '32, with 5 per cent. alloy. Gold pieces of one half the weight are more frequently met with; single ounces of gold (*dinh vang*, *golden nail*), and of silver (*dinh bak*, *silver nail*), as well as half and quarter ounces, are issued in far greater quantities than the above: all have the name of the reign during which they were cast upon them. Lately the king coined pieces in imitation of our dollar (*Tambak tran* or *Bakchien phe*), in weight 420 grains troy; but the adulteration of the metal is so great that the real value only amounts to 1-6 rupee. The relative value of the *silver* compared with the *zink* currency fluctuates very much—ordinarily two *kuan* are exchanged for one *Tambak tran*. The mass of the people is seldom in possession of silver and gold: there is only one rich man in the country, the *king*, and he takes a pleasure in hoarding bullion; the measures of length and capacity are nearly the same as in China.

We have hitherto only spoken of the *Annam* race, and it will now be necessary to remark briefly on the *other tribes* who inhabit the country.

The most numerous are the *Kambodians*, a race at present below the Siamese in point of civilization, with coarse features and dark complexion, and less of the Tartar countenance than any other *Indo-Chinese* nation. The men go half naked and the women also dress very sparingly, the higher orders only wearing sandals and the majority of the people going barefoot. They are moderate in their diet—a basin of rice and some salt-fish are all they desire for their daily food; they can even with this endure much fatigue and hard work. They are slavish in their veneration to their superiors, and willingly endure the most brutal treatment without murmuring. Laziness is a national defect, which is considerably increased by the Government robbing the people of the fruits of their labour. The *Kambodians* are patient in enduring cruelty, and always ready to sacrifice themselves for their mandarins: they have ancient laws, enforced with great strictness, and are trained from their youth to obedience. Polygamy is generally permitted, but only the nobility avail themselves of it, the concubine or second wife being indeed not far above the level of a slave. Pride and falsehood are not their besetting sins; a

Kambodian is rather rude than deceitful: they are much given to the worship of *Buddha*; their priesthood is numerous, embracing a great part of the adult males. The monasteries contain the little learning possessed by the nation, which consists in a trifling knowledge of the *Palee*, the language of their sacred books. Though their own literature is considerable, a priest considers it beneath him to know the works of his countrymen. The art of printing has never been introduced, and the books which now circulate are mostly written on palm-leaves, and are the productions of earlier ages. The language is harsh, more polysyllabic than any of the neighbouring ones, without inflexion, but comparatively rich: it contains many Siamese and Annamese words, yet differs materially from both tongues, having retained little of the system of intonation. The *Kambodians* are persevering agriculturists, loth to leave their own country and visit foreign parts: they possess no manufacturing skill, nor do they show any ambition to improve in civilization. Being enthralled by the priesthood and devoted to Buddhism, the nation stands as a mere blank, without a prospect of amelioration unless awakened by Christianity.

The inhabitants of *Tsiampa* (*Loi* or *Kwan loi* in Annamese) had a sterile soil for their inheritance: perhaps therefore they engaged in navigation to supply their wants. One of the rajahs having married in the fifteenth century a *Javanese* princess, would indicate some connexion with that island. Little is known of the country, nor does any celebrity attach to the natives, who being strict followers of *Buddha*, by turns became subject to the Kambodians and Annamese, but have remained vassals to the latter for a century. The oppression of their new masters has forced the people into mountain fastnesses, and the Cochin-Chinese, to control them, have erected many fortifications and keep up large garrisons.

The numerous *Moi* (mountaineers) tribes have yet escaped the knowledge of every traveller: they appear to be a hardy race, with a muscular frame, and hence well fitted for slaves. Of their religion, customs, and manners we yet know nothing, and the Annamese take a pleasure in describing them as *wild beasts*, though they are probably their ancestors, from whom, by a mixture with the Chinese, the present race sprang, and in fact the same here as the *Meuoutsze* are in China.

We may here speak of the *Christians* in *Annam*. The Portuguese having established their trade, considered it their sacred duty as true Romanists to promulgate their faith. The chaplains of their vessels were at first considered the proper men for effecting this purpose, but they did not show much zeal until Ruiz, a Spanish Franciscan, with some companions, in 1583,

commenced his labours. After him two Jesuits set sail for this country in 1615: though one of them fell a sacrifice to his zeal, Rhodes resumed the work with his companions and penetrated into *Tunkin* in 1627, where he converted many to popery. The congregations, notwithstanding all vicissitudes, increased; other orders likewise laboured, and there were in the seventeenth century about 400,000 individuals (not including the convents in *Kambodia*) numbered to the Romish church. The conversions were easy; a man accepted the Romish rosary for that which the Buddhists used, substituted for his household gods some images of saints, kept the festivals, repeated prayers, and he thus became a Christian. Priests and friars from *Manila* laboured hard in this matter, and under persecution and sacrifice of human life, most cruelly effected the shrine of idols in conformity with the laws laid down by the Inquisition. In *Adran* they found an enlightened advocate, a man both worldly wise and anxious to promote *Romanism*. The converts rapidly increased, as the supreme government made no opposition. On the restoration of the pope the missions were renewed with full vigour, and the French took a leading part. Bishops and simple missionaries flocked to the country: the old king remained neutral, without making any difficulty. Subsequently *Minghman*, fearing the too great ascendancy of foreigners, instituted a persecution of the most horrible nature, in which the foreign missionary and native convert shared together. Of the 425,000 Christians said to have lived in the country, many had to seal their confession of the *Virgin Mary* and firm belief in the saints with their blood, and the foreign missionaries were in nowise behind in this respect. Notwithstanding all this, new attempts have been made to supply the place of those who died in wretched prisons or on the scaffold, and a host of French priests* have from time to time penetrated into the country. On a recent visit of some British naval officers the Roman Catholics believed them to be sent for religious purposes, and came out in crowds to salute them, begging to be confessed. The present king acts with great severity against this religion, and a Chinese captain of a junk was beheaded because he had brought with him a French bishop, whilst the crew was sent into banishment. Most of the *Chinese* colonists are from *Teo-choo*, a district on the east of *Kuangtung* province: they are merchants, artisans, and common workmen, and as they are not subject to the oppressive law of gratuitous labour

* Since 1666 there have been of that nation 16 bishops and 80 French missionaries in *Cochin-China*; in *Tunkin* 17 bishops and 47 missionaries. There are at present 40 priests, and in *Tunkin* alone 80 native preachers, besides Spanish Dominicans. In *Cochin-China* Proper there are about 8000 Christians, in *Tunkin* about 360,000.

to the State, they have great advantages over the natives. Whosoever is lawfully married to a native woman becomes *bonâ fide* a citizen, and his children are not allowed to leave the country, and are treated as if they were actually *Annamese*.

The few descendants of Portuguese settled in *Kambodia* we need not mention, or some thousand *Malays*, who have also been domesticated there. There reside other rude tribes, whose names we do not even know; being few, they are scattered, and remain in a savage state.

Political Divisions — *Kambodia* was originally divided into six provinces, viz., *Dong-nai*, *Quiduk*, *Sulek*, *Metho*, *Kamao*, and *Teksea* — names, though politically extinct, still, in the mouths of the people, are far more in use than the new ones applied by the Cochín-Chinese. These are *Go-sat-tran*, *Hateen*, *Nam-rang*, *An-giang*, *Vinh-than*, *Dinh-tuong*, *Phan-yan*, *Bien-hoa*. *Go-sat-tran* comprises the N.W.; the southern port is not unfrequently named *Gea-dinh*, and the northern mountainous division *Nocor Khamer* (the native term attached to it), without any subdivision. Our former general geographical remarks have given the outline of the country; we now add that *Laophénpaou* is the northernmost city on the *Mekong*, a place of some trade, where the *Kambodians* mix with the *Laos*. About 20 g. m. farther to the S.E. on the same river is *Ban-chan*, *Koolutheén*. In lat. 16° is the N.W. frontier town towards *Siam*, placed in a wilderness. *Lak-khon* is on the left bank of the river, and principally inhabited by *Laos*, this being one of their most flourishing establishments. *Than-lao-thak* is in 15° 20' N. lat., and *Muong-hong* in 14° 2', both on the right side of the river; *Kaba-than* is lower down; *Tinh-suong* amongst the mountains in the *Moi* country; *Suk-la* and *Suk-xoi*, with *Kamon*, are frontier towns on the boundaries of the *Bat-tambang* province. Of all the above-mentioned places none contains more than 20,000 inhabitants, who either live in small bamboo huts, or, if wealthy, in dwellings made of planks. Some have been fortified by the sagacious *Annamese*: and if it were not for this circumstance they would not deserve the title of *towns*. The inhabitants, accustomed to poverty, have never had any intercourse with foreigners to feel the want of their commodities. Amongst them are many excellent hunters, bold enough to meet the elephant and tiger in deadly combat: the latter animal is frequently tamed here and exported, to be sold for even less than a buffalo. With the hides and dried flesh of *stags*, which are frequently met with, a considerable trade is transacted in the towns on the coast, and the meat principally sent to *China*. The antlers and sinews furnish there a delicacy which only the rich can afford, and are sold at very high prices. All the parts of a

tiger, from the skin to the very bones, are exported to China: the gall, in particular, is in much request amongst military officers, who make a mixture of it, and drink it to inspire them with courage: they also sleep on the skin, so that the inhabitants find hunting a very profitable employment. The chase is, indeed, the only profession they carry on to perfection; their fields are indifferently cultivated, and they have no manufactures.

Of the ancient capital *Pompaipret* (Vinh-lung) on the *Bien-ho* (Great Lake) we have already spoken. The walls are still standing, and fully prove that it must have been a very large city, with an immense number of inhabitants. There are the ruins of magnificent and extensive temples, the substructions of palaces and antique sculptures, all in heaps of rubbish, without attracting the slightest attention from the existing generation.

The present capital, which does not contain much above 30,000 inhabitants, and these in the most abject poverty, is *Columpé* (Nam-vang-than, in Annamese), on a branch of the river flowing out of the lake, and joining the *Mekom*. It is admirably situated for trade, and a few Chinese have availed themselves of these natural advantages to carry on their traffic. The present king lives under the oppressive hand of the Annamese, in a humble manner, with inadequate revenues, and almost forsaken by his own subjects. Strictly watched by the conquerors, and treated with contempt by the *Kambodians* themselves, his lot is by no means enviable.

Of all the cities of lower *Kambodia* *Saigon* stands foremost. The depth of the river on which it is placed, its vicinity to the sea, and its extensive inland communication, constitute it an important emporium. The entrance is at *Kangeo*, a miserable fishing village amidst jungle, and surrounded by a wilderness that swarms with tigers and serpents.

The country, however, soon afterwards improves: large rice-fields are observed through the thick foliage: the river continues very deep, and the ascent leads to two of its branches, both of which fall, at a short distance, E. and W. into the sea. The population is here considerable, and several manufactures of coarse silk stuffs are said to exist not far from this spot. *Saigon* is about 30 English miles from the sea: but before reaching that place the traveller arrives at *Pingeh*, the residence of the provincial governor: a city with many new fortifications built after European principles, with arsenals and docks for the building of war-vessels, and a large population with a considerable trade. *Saigon* is situated about 3 miles farther, upon an insignificant branch of the river; and though the principal trading town, it does not admit any but small vessels. Both are intersected by

many canals full of boats, like Chinese towns; for many people live here continually on the water. One may see here the very large *Kambodia* timber, of which a single plank will sometimes measure 100 feet; and the largest boats are hollowed out of a single trunk. It is also so cheap that nowhere can vessels be built at so low a rate; and the king paying nothing either for materials or workmen, his navy is the cheapest in the world. The streets are broad and lined with bamboo shops, the Chinese alone having respectable houses. Provisions being very cheap, one scarcely ever meets a pauper; but the mass of the people possess little beyond the necessities of life, as they are kept in a state of poverty by the Government. At the commencement of this century the foreign trade was considerable, especially with Portuguese vessels; now, indeed, not a single ship enters the harbour, which, by its deep river and variety of natural productions, is superior to any other in *Annam*.

Dong-nai lies two days N.E. of this city, to which it is joined by an excellent canal. Being the ancient capital, under the *Kambodian* reign, of the province to which it gave its name, it is, up to this day, visited by Chinese merchants for the sake of trade. The betel-nut obtained here is of the best description. The city itself is far below *Saigon* in extent, which some estimate to have 180,000 inhabitants. The left bank of the river is thickly inhabited. We find the large city *Bien-hoä*, towards the N., a very thriving place, on the same canal as the former: *Lai-thu* and *Go-kong* are placed on the very banks of the river; farther inland, *Dahan*, *Dongmen*, *Rach-choai*, *Kamro*, and other places, with a numerous population. On the right bank are *Phun-yen-tran*, the chief town of a district, *Tanan*, and others. The Delta, by reason of the frequent inundations and impenetrable forests, is far less inhabited.

We now approach the northern branch of the *Mekong*, a country teeming with the fruits of the earth like Egypt. Not far from the entrance is *Dinh-tuong* city, a place of some importance. We find, on pursuing a north-westerly course, *Becan*, *Bach-san*, *Canto*, and *Bai-cham*. The rice-fields are here of the most luxurious description, and the crops seldom fail; yet there exists still greater fertility in the country between the two branches, where we find *Tra-on*, near the mouth of the southern branch; then *Vung-lim*, *Kaudong*, *Tham-buon*, and other places. The whole presents here one level of rice-fields, similar to the plain in the neighbourhood of *Bong-kok*. The natives, notwithstanding this great abundance, are very poor, and reside in wretched hovels.

On the right shore of the southern branch (also called *Onbe-quame*) we perceive the same luxuriant vegetation and exten-

sive cultivation : the principal place is *Trandidao*. There are other cities, such as *Ba-hat*, *Rach-rit*, *Chaudok-don*, and *Pak-kam*.

The south-western part of *Lower Kambodia* is far less inhabited. On the coast we find a few inhabitants ; but farther inland immense, and, in most places, impenetrable jungles present themselves, which render cultivation difficult. *Hateèn* (Kangkau) we have already mentioned ; it is a thriving city on account of Chinese industry. *Giang-than* and *Rach-vaoh* are likewise towns of some extent. To the N. of *Kang-kaou* the country becomes very mountainous, and total solitude reigns there amongst the forests and the most exuberant foliage—the abode of monkeys and tigers.

Looking at *Kambodia* we find that, although never esteemed highly by Europeans, it is nevertheless a region of importance—with many cities, abundant resources, natural beauties, and scenery well worth exploration.

Cochin-China is divided into the following districts, beginning with the S. :—*Bin-thuan*, *Nha-trang*, *Phu-yen*, *Qui-nhon*, *Hoàng-nai*, *Quang-nam*, *Quang-duk*, *Quang-tri*, *Quang-bin*, *Ngne-an*.

Of the sterility of the southern part, which embraces *Tsiampa*, we have spoken before ; yet its sandy soil bears productions peculiar to this region, and nowhere else is the *eagle-wood* superior. The country has not lost by being made a province of *Annam* ; for though the nationality of the inhabitants may be merged in that of the Annamese, more industry than ever prevails now in this sterile district. There are, however, fertile spots, amongst crags and rocks, on which many cities are built ; such as *Phu-giai*, *Bin-thuan-denh*, the seat of government ; *Kana-oai-mat*, *Tamhung*, *Chornai*, *Song-hung*, *Maé-nuong*. The former capital, near the *Cam-ranh* bay, has scarcely any ruins to testify that it was once the residence of an independent prince.

The province of *Nha-trang* is superior to the former in cultivation, though frequently exposed to the inroads of the mountaineers (*Moi*), and now likewise of the *Tsiampese*, a nation disgusted with the new rulers, and possessing the fastnesses amongst the mountains. A number of small places are situated towards the coast : the principal are—*Bin-hoa-thanh*, *Thuy-trieu*, *Bathap*, *Nung-gang*, *Cau-kheo*, *Binh-kang*, *Haduk*, *Thien-pak*, *Daian*, *Hodin*, *Bong-nai*, and *Kung-da-bid*. Towards the mountains exist only insignificant villages, inhabited by mixed races, of *Annamese*, *Tsiampese*, and *Mois*. The *Cochin-Chinese* call this and the former region *Thuon-thieng*. Immense labour has been bestowed by the present Government in fortifying the country against all attacks. Millions have been expended, and thousands of soldiers are requisite to keep a scattered population in sub-

jection, with no corresponding advantages derived from these precautionary measures.

If *Nha-trang* be the largest, *Phu-yen* is the most fertile of all Cochín-Chinese provinces: it abounds in grain, leguminous plants, and all the articles of sustenance used by man. On both sides of the ridge of mountains which intersects it are numerous cities—such as the capital, *Phu-yen-dinh*; also *Vung-mu*, *Kung-binh-phu*, *Vin-cu-mong*, *Hoa-vong*, *Trieu-tuy*, *Chan-thach*, and others; and to the W. of the mountains, *Deo-koo-mung*, *Kung-kwang-de*, *Ben-ngua*, *Bang-tre*, *Hoa-chaou*, and several more. The land seems to be quite a paradise; and were it not for the oppressions of Government it would be one of the most charming spots on the globe.

Qui-nhon is, in cultivation and civilization, very little behind the former. As the seat of rebellion, whence the *Tysons* issued, its fame has never been buried in oblivion. The productions are various in a varied soil, and high mountains are only found towards the *Moi* country. There is seen *Tyson-thuong*, a city whence the rebels, who proved such a scourge to the country, came. The eastern part is also known under the name of *Bin-dinh-tran*. Most of the cities are towards the sea, as *Bin-dinh-than*, a strongly fortified town, *Mekung*, *Guthe*. *Nuok-man*, *Chomoi*, *Nhadoi*, *Govang*, *Song-kan*, *Muonglo*, *Suoi-lam*, *Tan-kvang*, *Ansan Benda*, *Dong-hau*, and other places of note. The inhabitants exert themselves to the utmost to improve their lands, but in so doing they render them tributary to the rapacity of Government.

Quang-ngai is a small mountainous country which grows a considerable quantity of sugar: its capital is *Ding-quanh-ngai*. The inhabitants are many; and there is no want of cities and villages, such as *Laoi-ca*, *Dong-ngo*, *Hoa-song*, *Ho-vom*, and *Trung-son*.

The celebrated harbour of *Turan* is situated in *Quan-nan* province: sugar and cinnamon are here the principal productions. It is far less inhabited than the former; and besides the capital, *Quang-nam-dinh*, we merely mention *Faefo* (*Hucian*), *Kung-ngai-kho*, *Chondön*, *Tra-dinh*, *Phu-thuong*, and *Bunghe*. The people are enterprising in their fisheries and well adapted for sailors. Their industry has to force a sterile soil to be productive. To the celebrated marble mountains, not far from the above bay, we have already alluded. The caverns they contain resemble natural domes. The most remarkable circumstance is, that they rise in a plain near the sea, without any connexion with other mountains.

Quang-duk, also called *Hué-phu*, is now approached: there the capital is situated. Being a small district, and considered

as the royal domain, it appears to be barren, but, on nearer examination, fertile spots are seen interchanged with romantic hills.

The capital, about 6 miles from the sea, on the bank of a river—called by the natives *Phu-thua-thien*, by foreigners *Hué*, or *Sun-Hué*—proves the foresight of *Gia-long*. Aware of the miseries of a civil war, he wished to establish a stronghold for the royal family; consequently a regular fortification was raised, about 6 miles in circumference, in the form of a square with a deep ditch, and a canal to communicate with the adjoining country. Cannon after the best models were cast, as well as shot and shells. A large garrison in barracks surrounding the palace was appointed, and extensive granaries were filled with corn. On examining these works, one is forced to acknowledge that there does not exist a single town in all Asia possessing such admirable fortifications; but the palace itself exhibits nothing extraordinary. The suburbs are broad enough, yet the houses indicate poverty: neither the bustle of a capital nor the trade of manufactures exists. With the exception of a few Chinese, the people are poor; the soldiers and their officers have barely sufficient for their subsistence; the mandarins, who bask in the sunshine of the court, have a tolerable income, though the king alone can be called wealthy. In the neighbourhood are several palaces, summer residences, and royal retreats: the city itself with the suburbs, including the military, has perhaps not above 50,000 inhabitants. Its central position and romantic environs may have led the rulers to settle there, whilst other places presented far greater natural advantages.

A few smaller places lie here around; such as *Long-truoy*, *Cau-hai*, *Buong-lam*, *Dahan*, and others, none of which however are of any importance. A few miles W. of *Hué* a high range of mountains runs nearly N. and S.; dense forests succeed, and behind a second ridge, of more difficult approach than the former, the country of the *Laos* commences.

Proceeding farther north-west, we arrive in *Quang-tri*, a well cultivated and thickly inhabited province. The cities are numerous; for, besides the flourishing metropolis of the same name, we find *Kambo*, *Xu-yen-lam*, *Hu-yen*, *Minhling*, *Thuy-ba*, *Saou-kat*, *Baynoat*, &c., and towards the wall of separation, a strong fortification in the direction of the sea, called *Quang-bin-dinh*. There are few spots in the whole empire so adroitly rendered tributary to the use of man. On the south-western extremity there is a valley surrounded by the very high mountains, called *Ailao-don*, a place of banishment, on account of the insalubrity of the climate. It is a dreary spot, from whence the thick jungles of *Quang-binh* extend in unbroken succession.

The latter district has only recently been added to the Empire, and was in times of yore looked upon as belonging to the Laos country.

On the other side of the wall we enter *Boshinh-trong*. The eastern part of this district is well inhabited; *Da-mai*, *Kebung*, *Dinh-ngoi*, *Kehoe*, and *Hunh-trung* were formerly frontier fortresses; at present they are cities, and the abodes of industry.

The largest of all the provinces is the northernmost, *Nghe-an*, an extensive champaign country, possessing rice-fields, a vast agricultural population, and a few cities, as *Loodong*, *Kon-nam*, *Hatiah*, *Anlae*, and *Vinh*. Towards the west, the country grows very mountainous, and improves in grandeur the nearer it approaches the Laos territory. There is a considerable trading town, *Nga-ba-song*. The two latter provinces formerly belonged to *Tunkin*, and are now permanently added to *Cochin-China*, for the security of the frontier.

Tunkin itself is divided into the following provinces:—*Thanh-noi*, *Thanh-ngoai*, *Hung-hoa*, *Nam-thuong*, *Nam-ha*, *Hae-dong*, *Kinh-bak*, *Son-tay*, *Kao-lang*, *Lang-bak*, *Thae-nguyen*, *Tuyen-kwang*, and *Quang-yen*. This country is so little known to foreigners, that our observations will necessarily be very brief.

The two southernmost, *Thanh-noi* and *Thanh-ngoai*, exhibit the same features as the conterminous province of *Cochin-China*; viz. continual plains with a rising ground towards the west, where a ridge of high mountains forms the frontier towards the Laos territory. We do not know of a single city in these regions. The latter district is situated on the sea-coast; the former on a fertile river; both are very productive, with a thriving peasantry.

Son-tay is behind a ridge of mountains, and towards the Laos frontier a country of hills and dales intervenes, with a rural and quiet population.

Ning-binh and *Lon-nam* are small territories, which derive their names from large cities, and are situated to the south of the great river, belonging to *Tay-son*. They are, strictly speaking, royal domains, for the capital of the country, *Kecho* or *Hanoi*, is on the right bank of the river, not far from the Laos frontier. Being the largest town in the whole empire, with no less than 200,000 inhabitants, it is more advanced in arts and industry than that of Hué. Weavers are numerous, and manufacture a kind of cotton-stuff, cheaper than any of the same description in China, with which no foreign manufacture could possibly compete. There are many fine buildings amidst hovels, and likewise wealthy natives employing considerable sums in trade. A very ancient place, and the abode of kings

through many generations, it has only lately become a mere metropolis. The national antipathy of the Tunkinese to the Cochin-Chinese is, however, always alive ; and the slightest provocation may lead to an insurrection, like in days of yore. As a nation in general, the Tunkinese are far more civilized than their neighbours, and possess more of the Chinese character. By the latter they are considered as honest. Their industrious habits are prominent, being early and late at their work ; and as husbandmen, lackerers, weavers, and fishermen they have few equals. *Heèn*, farther down the river, on its southern bend, has a large trade, in which the Chinese share considerably. To the north, on the left bank, is the city *Namdinh*, which gives its name to a district. Strong currents and irregular tides prevent the concourse of junks from being greater, and many are annually lost.

Hae-dong includes the northern shore of the river. The capital of the same name is a very large place. Not far from it are extensive forests. The cultivation of rice is here also the principal branch whence the inhabitants derive their subsistence. The north-eastern ports of *Tunkin* are known under the name of *Kwang-yen*, including the peninsula of *Vinh-van-ninh*, to which the pirate isles nominally belong. The metropolis of the same name is the only place of importance for many miles around ; *Macao* has attained some celebrity as a marine port ; *Hoa-phen* and *Kiken*, however, are insignificant towns. On the north-eastern frontiers towards *Kwang-tung* lie those marshes and jungles, whose pestiferous exhalations have proved so very destructive to the Chinese armies, which at times invaded the country.

One of the largest districts is the northern Lang-bak (*Lang-son*) ; its ground is well watered by the *Tuk-duk* river. Farther north, the country rises into mountains, whilst the southern frontiers are very flat. Besides the capital, there are no cities, the inhabitants preferring to live in villages and hamlets.

Westward of this is *Kao-lung*, a very extensive valley, difficult of access, and once a state in itself, with gold and silver mines in the surrounding mountains. The inhabitants have little intercourse with their neighbours, and enjoy a shadow of independence. *Tuyen-Kwang* is a rich district in every respect. All kinds of grain thrive there to a great extent. No less than five rivers traverse the land, and the richest mines exist there ; from thence the silver, which circulates in considerable quantities throughout Tunkin, is brought. The inhabitants are a hardy race ; toiling throughout their lives, they are most eager in the pursuit of gain.

Hong-hoa-tran is situated to the north of the Laos country,

which is a dependency of Cochin-China. Here are also some rich metallic veins, and the people are much engaged in mining operations. The western portion is a plain, and a grain country.

Thoi-nguen, the central province, is a champaign country, full of rivers, and well adapted to rice cultivation; the other districts are very insignificant, and, consequently, we shall omit them.

The *Annam* territory of the *Laos* country (*Laktho*) is equal in extent to Cochin-China Proper; with the *Mekom* for its southern frontier, *Tunkin* to the north, and both to the east and west mountain chains, separating it on the one side from *Tunkin*, and on the other from the country of the same tribes, who are tributary to *Birmah*; it has strong natural boundaries. The south is a large plain, cultivated in patches and interspersed with jungle. From thence different raw productions are at times imported into *Annam*, through mountain passes. The present *Annam* government has constructed roads throughout the district, so that it can maintain some ascendancy over the vassals. Every village and city have its chiefs, and a nominal Leader assumes the government of the whole. This feudal tenure being little enforced, the tribes are therefore divided amongst themselves. They nevertheless speak the same language, have the same customs, religion, and literature, so that the head of a conqueror is only wanting to rescue this interesting race from their thralldom under many masters. Such an event once took place in the sixteenth century. The various leaders who lived along the *Mekom*, from the frontiers of China to *Kambodia*, united under one leader, the mountaineers joined them, and then proclaimed themselves a free people, being able to defy their neighbours. But instead of being satisfied with their independence, and laying the foundation of a lasting empire, so rich in natural resources, they of one accord felled a number of trees, made large rafts, and floated down the river, in order to subject the southern part of the peninsula to their sway. Acting without plan, they were quickly scattered, and lost amidst jungle and swamps. Their neighbours being made aware of their dispersion, regained their country, and the nation returned into bondage, from whence it has not yet been emancipated.

The principal states near the banks of the *Mekom*, along the frontiers of Upper *Kambodia*, are *Muong-thin*, *Muong-phong*, *Lak-khon*, *Lao-cheda*, *Bandon*, *Muong-khuk*, and *Vanluong-kwok*. The inhabitants are here far from inconsiderable, and the champaign country is thickly studded with agricultural houses and villages.

One of the central states is *Muonglong-phaban*. It comprises a large territory, remarkable for the many rhinoceroses and elephants that live in the stately forests.

North-west of this is *Keeson*, which keeps up a lively intercourse with *Tunkin*, of which many natives have removed thither, so that it has the aspect of an Annamese settlement.

Due north from *Muonglong-phaban*, occur *Ninh-kuong* and *Lak-ruong*, the residences of powerful chiefs, who rule over a large valley, and are nearly independent.

The whole northern part, consisting of two distinct valleys, has mere villages. All nature here possesses a certain grandeur, and the habitations of men are often found where we expect eagles' nests. There are nevertheless large plains, filled with a contented and thriving people.

The Annamese despise the Laos, as a nation ignorant of the Chinese character, and entirely uncivilized. The Laos having much to endure from tax-gatherers, merchants, and pedlars, submit cheerfully to their oppressors.

The Government.—The king is supreme and uncircumscribed in his power. He can decide according to or against the laws; the life and property of his subjects being his, he disposes of them as he likes. Usage prescribes that he should speak of himself as the Father of his people, and calling his government paternal, that he should inflict even cruel punishment as a chastisement for the improvement of his children. Yet he considers the Emperor of China as his supreme lord, who may judge his conduct, blame or degrade him. Though the acknowledgment is merely nominal, it constitutes a fundamental law, and as such is registered in the archives.

His courtiers and eunuchs are many, possessing great power. The harem, however, is not large, nor need the monarch be jealous of his wives, for females are not here, as in other Asiatic countries, put under restraint. Every luxury may be found in the palace, with many objects of art and ingenuity from Europe; amongst which, an extensive collection of precious stones, gems, and pearls is seen. The three last sovereigns have emulated each other who should amass most, and the markets of China and India have been ransacked to satisfy the kings, whilst the French have imported large stores of Parisian trinkets. The present sovereign seldom appears abroad, and always with a strong guard.

The principal officers of state are, the Governors of *Tunkin* and *Kambodia*, and Minister of Trade; the latter also controls the foreign department. The supreme Government much resembles that of China, being formed on its model. The six tribunals therefore, with small modifications, exist, and at the

head of each a minister of state. These, with the above, and a few persons chosen by the king, constitute the council of state, which the sovereign convokes at pleasure. All the officers are dressed in the Chinese fashion, under the *Ming* dynasty, and divided, as their prototypes, into ten orders. But the military mandarins are considered higher than the literary authorities, which is the very reverse in China. A military Governor is at the head of each province, and he has two deputies who are his assistants. The same form prevails in the districts called *Tran*; these are subdivided into *Huyen*, or counties, and *Tso*, or townships. There is, moreover, a well-organized municipal government in the cities and villages, carried on by the older and more respectable persons.

The principle, that there should be only *one man* invested with authority, is consistently carried through all departments. The nobility is created at the king's pleasure, and no one has any power except derived from him. The nation, consequently, is one whole, and the few who enjoy the royal favour are the sole possessors of privileges. It is a democracy on a large scale, on broader principles than even in China; examinations for degrees also take place in Annam, as well as China, but they are not carried on with such vigour.

Every third male must serve the Government from the age of 18 to 60 years for the space of three years, either as sailor, soldier, or common workman. After this he may go home; but when another three years have elapsed, he is again called upon to perform the same service. Such is the constant routine of unrequited labour to which this nation is subject in ordinary times. In war, however, or on an emergency, the requisitions are far more extensive, and the whole male population is often turned out to construct a road or dig a canal. As the supplies furnished to the workmen are very scanty, and no attention is paid to them in sickness, many then die from sheer want in a country teeming with fertility. In Kambodia these corvées are more severe; whilst Tunkin enjoys some exemption, and only the seventh man there is in the service of the state.

The guards consisted of 36,000 men, divided into 40 regiments of 10 companies of 60 men each, and these are classed in five brigades. There are, moreover, 25 regiments which form five legions, and both constitute the actual force of the Empire. As the horses are very indifferent, there is no cavalry, but 800 elephants are substituted, some being attached to every regiment. The provincial troops are on a smaller scale; and the whole army, which numbered during the time of the warlike *Gia-long* 150,000 to 200,000 men, is now only 60,000 strong. The entire military establishment has lately been much reduced.

For the protection of the coast marine regiments are formed, to act as sailors and soldiers on board the men-of-war. These consist of rowing boats, which sail with the utmost rapidity, and are admirably worked with 40 to 100 oars. They have also galleys that sail and row, carrying from 4 to 16 cannon; vessels half-junk and half-ship, from 10 to 24 cannon; and sloops of war according to our model. Whether any larger craft has been added to the navy we are not aware, nor can we state the number of vessels at present in commission. The former kinds of boats are the most useful and numerous, and Gia-long had no less than 500 of them in his service.

The discipline of the navy as well as army is according to European principles; still this cannot inspire courage, as the bamboo is always used, and servility most barbarously inculcated. The ease with which the French, on a recent occasion, destroyed their men-of-war, proves that though the form of tactics with the Annamese is not different, still the same spirit does not animate them, and they are feeble when opposed to Europeans, notwithstanding their vast superiority over all other southern Asiatics. The soldiers all wear uniforms—a red tunic; not so the officers, who dress like common gentlemen. The muskets and spears of the soldiers are excellent, the guns admirable, and the manœuvres of the army very scientific, and executed with great precision. No native prince in these parts of the world can show anything like them. But the men are badly paid (about half-a-dollar per month), and receive besides a ration of rice. A lieutenant gets only double, and so on in proportion in the higher grades—nowhere, however, above a bare subsistence. As the soldiers, on having served three years, are sent home, the officers alone can be said to constitute the standing army. There is thus much weakness, notwithstanding the apparent strength, in the military department; yet the Annamese are strong enough to be a match against any power on the peninsula, as well as China.

The law is here, as in China, everything; but the dispenser of the same bends it to his own purposes, so that it materially strengthens the administration. The bamboo is the invariable instrument of castigation, inflicted on all classes, and even the prime minister himself is liable to it. Other punishments are very similar to those of China, and are bestowed with a recklessness scarcely credible. The prisons are fearful abodes, full of misery and filth; and mercy forms no part of a judge's character, for which unbending severity is the best recommendation.

The revenue is principally derived, as in China, from the land. There is also a poll-tax of a little more than half-a-dollar for

each adult male subject not employed in the king's service, with sundry other contributions from the industry or consumption of the inhabitants. The land-tax is partly paid in kind, and the produce hoarded up in the granaries of the capital. The king is as anxious to receive the money into his treasury as he is tardy in issuing it from his hoards. The consequence is an immense accumulation of bullion in the exchequer. Crawford was told that there was at one time gold to the amount of seven millions of dollars in the treasury lying dormant, without the slightest use to the country.

In the imposition of taxes, the Cochin-Chinese government need not study the system of Western nations, for the mandarins are quite able to levy any amount. The limit prescribed is the wretchedness of the nation, destitute of all resources. If the government falls, its treasury is plundered, its resources are cut off, no appeal to the people can be made, and it must be ruined, or replenish its coffers by some desperate act.

The Annamese are thus shown not to rank low in the scale of Asiatic nations. The government, with all its defects, is superior to the Persian, to the native administration in Hindostan, and to that in Siam. As no inveterate prejudices exist, great improvements will take place with the spread of Christianity.

BIBLIOGRAPHY.—The books for the knowledge of these countries are by no means numerous. Foremost stands *Crawford's* 'Embassy,' a work of the highest value, being full of correct information. *Finlayson's* 'Journal' is interesting. *White's* 'Voyage to Cochin-China' shows a prejudiced mind soured by ill success. *Barrow's* 'Voyage,' like all the works of that author, is able. *Bissachere*, dealing in generalities, presents not a true picture of either Tunkin or Cochin-China: some of the old relations are amusing, but not instructive. The 'Lettres Édifiantes' give here and there valuable hints. *Valentyn's* 'Beschoroing van Kambodia,' in his great work on the East Indies, furnishes little information. From *Dampier's* 'Voyages' we receive sound instruction. *Gaubil's* 'Lettre' has a few important remarks. *Paulo Condore Purefuy's* 'Cursory Observations on Cochin-China' have some value. *Alex. de Rhodes* presents the best account of Tunkin we yet possess. The description of the Chinese ambassadors of *Chen la Fong-thouki*, as given by *Abel Remusat*, has some interest. *Dayot's* Charts are excellent. The 'Researches' of *Abel Remusat* are the best of that country. The most superior and accurate map we possess of the entire Annamese Empire is the "Annam quoe hōa do," published by *Taberd*. His dictionary, Latin and Annamese, and Annamese and Latin, is a very valuable work. The 'Gan-nan kwotung-che' is a diffuse compilation;

throughout the whole of Chinese history there are various hints about *Tunkin* and *Cochin-China*. *Mailla*, in the 'Histoire générale de la China,' furnishes some notices, as well as *Abel Remusat's* 'Du Royaume de Camboge,' in the 'Nouvelles Mélanges Asiatiques,' *Berghaus's* 'Karte von Hinter Indien,' and 'Mémoires,' evince the diligent geographer; and *Ritter* is a laborious and very careful compiler.

XIII.—*Geographical Notes on the Nile.* By Professor PAUL CHAIN, Corresponding Member of the Royal Geographical Society, Geneva.

[Read March 12, 1849.]

CLOT BEY says, in his 'Tableau de l'Egypte,' that the level of the Nile at Cairo is 40 French feet above the Mediterranean, 287 feet at Svout, 357 feet at Thebes, and 543 feet five leagues lower down than Assouan. According to the Duke of Ragusa ('Voyage en Orient') the fall of the river is 6 metres between Benisouef and Abou-Girgé. Unfortunately neither of these authors has informed us by whom and by what means their levels have been measured. I am inclined to think the fall of the river has been much exaggerated, excepting the height at Cairo, which was actually measured by MM. Lepère and Jacotin during the flood of 1798. The Duke of Ragusa was provided with an apparatus for thermometric levels, but was deterred from publishing the results he had obtained by seeing that they led him to absurd conclusions.

Mr. Lambert, the present director of the Polytechnic School at Boulak, broke his barometer while he followed Mohammed Ali in his journey to Nubia—an accident of common occurrence. I am only indebted for having preserved mine entire to my never allowing it to be out of my hand. In order to compare my own measurements with the regular observations kept at the observatory at Boulak, I applied to the director, Mr. Lambert, who kindly forwarded me a translation of those observations. The building of the observatory has for its nucleus the old fort Donzelot, which the French had built close to the burial-ground at the northern extremity of the suburb of Boulak during their occupation of Cairo. It is well provided with astronomical and meteorological instruments, and hourly observations are made with the barometer and thermometer, which implies a degree of accuracy certainly not surpassed in any other observatory. Mr. Lambert intends to publish them both in Arabic and French, and they may be rendered very useful to travellers. Mr. Lambert told me that none before me had ever applied for them.

The regular observations are made with a barometer from Newman, No. 77, the basin of which is 9·770 metres above the threshold of the upper door of the Mekyas, that door being itself 1·020 metres above the inferior level of the first scale, or 10·250 metres above the zero in the scales. Lastly, the zero in the Mekyas is 3·342 metres above the low-water level in the Mediterranean Sea,* so that the basin of the barometer in the observatory is 23·362 metres above the sea. I now proceed to give the measurements I have taken, by comparison with those at Boulak, of the slope of the Nile and of the height of some points on both sides of the valley :—

	Height of the Nile at the Observatory at Boulak.	Height of the Nile above the Mediterranean.
	Mètres.	Mètres.
Gizeh and Boulak	— 14·1	+ 9·2
Bedrechein, near Memphis	— 13·7	9·6
Benisouef	— 2·2	21·1
Djebel Teir (under the)	— 1·1	22·2
Minieh	+ 12·0	35·3
Beni-Hassan	18·1	41·4
Rhoda, sugar manufactory	22·7	46·0
Sheikh-Abou-Said, S. of Melawi	23·7	47·0
Hamra, the port of O'Syout	23·7	47·0
Akmim	32·6	55·9
Girgé	34·0	57·3
Between Béliéneh and Farshout	35·2	58·5
Kéneh	35·9	59·2
Thebes	44·8	68·1
Esneh	57·1	80·4
Edfou	64·5	87·8
Ombos	66·6	89·9
Between Ombos and Assouan	72·6	95·9
Assouan (Syène)	81·0	104·3
Philæ	100·0	123·3
<i>Other Places.</i>		
Cairo, on the Esbékyeh	— 13·4	9·9
Cairo, observatory at Boulak	0·0	23·3
Beni-Hassan, tombs	73·4	96·7
Beni-Hassan, summit of the cliffs	128·8	152·1
O'Syout, upper range of tombs, 15 mètres under the summit of the cliffs	108·1	131·4
Thebes, entrance of the tomb of King Amunmésès	203·9	227·2
Thebes, pass of Djebel Abd-el-Goorna	235·1	258·4
Thebes, Djebel Abd-el-Goorna	254·4	277·7
Ombos, at the greater temple	99·9	123·2
Assouan, quarries of quartz	114·6	137·9
Philæ, the lesser temple	107·7	131·0

Should my measurements prove exact, the fall of the river would be as follows :—

* Description of Egypt by the French commission, 'Etat Moderne,' vol. i., plates 14 and 23.

	Distances in Kilomètres.	Fall per Kilomètre. Centimètres.
From Philæ to Assouan (cataracts)	13	146
From Assouan to Edfou	107	14
Edfou to Esneh	50	15
Esneh to Thebes (Louxor)	57	22
Thebes to Girgê	160	7
Girgê to O'Syout	154	7
O'Syout to Minieh	143	8
Minieh to Benisouef	133	11
Benisouef to Cairo (Boulak)	160	12
Boulak to Rosetta	249	4
Boulak to Damiette, the branch of Damiette being more meandering	258	3½

It is with reason considered difficult exactly to ascertain trifling differences of level in the lower part of a large river. The only means of avoiding those errors is to make the observations as numerous as possible. I have had the advantage of a series of observations in some places, such as Thebes, for instance; whilst I abstained from making use of others made under unfavourable circumstances near Dâshour, lower down Abou-Girgê, near El Fent and Aboutig, south of O'Syout. I am far from believing them free from error; but I think the best means of having them corrected or corroborated by other travellers is to publish them and to place them in the hands of the director of the observatory at Boulak, than whom no one is better fitted to make a complete table out of separate elements. I herewith transcribe my actual observations, in order to make it easier for a future traveller to select from them such figures as will best concur with his own, and to take averages from a more complete set.

I confess that averages calculated from very discrepant elements, and used without examination, will lead to erroneous results, and I find nowhere a stronger proof of this than *Captain J. H. Lefroy's barometric and thermometric measurements of heights in North America*.* It cannot be denied that averages taken from such different data as will be found here are liable to be wrong. For Lake Huron, one observation gives 521 feet, and the other 572. To Lake Superior, barometric measurements gave 560, 515, 751, and 803 feet; while by thermometric measure it would be only 457 or 496 feet. Lake Winnipeg, thermom. 433 and 923; Lake Athabasca, thermom. 54, 105, and 789; the Great Slave Lake, thermom. 184 and 607; the Lesser Slave Lake, thermom. 1696 and 2008 feet.

I often set aside such measurements as seem too discordant, or taken under atmospheric circumstances that made their accu-

* Journal of the Royal Geographical Society of London, vol. xvi. Part II.

racy doubtful. A long experience of barometric measurements, both in the Alps and in Italy, makes me confident, on the other hand, that the barometer may prove a very useful and accurate instrument when used discreetly. I may, perhaps, venture to give the following instance of a measurement I took on the 25th of June, 1840, with peculiar care and under a very propitious state of the weather. It was on the pass of Saint Guigues, north of Gap, in Dauphiné, which parts the waters of the Durance from those of the Drac. I compared first my barometer (Bunten, 318) with those used in the observatories at Marseilles and Geneva, and calculated the height of the pass by a comparison of my measurement with the corresponding simultaneous observations made at Marseilles and Geneva. By the first I found the pass to be 1272.50 metres above the level of the sea, and 1272.81 metres by the second.

BAROMETRIC MEASUREMENTS made in Egypt during the months of December, 1846, and January and February, 1847. Unless mentioned otherwise, the barometer (Bunten, No. 318) was hung 0.75 m. above the level of the water:—

	Month	Day	Hour.	Barometer Milli- metres.	Thermometer Centigrade.		Sky and Wind.
					Temper- ature of the Mercury	Temper- ature of the Air.	
Alexandria—1st story, Hotel d'Orient	Dec.	21	7	765.6	17.9	14.8	Vapours, W.
Ditto ditto	"	"	8	765.6	18.3	17.5	W.
Ditto ditto	"	"	9	765.7	18.6	16.2	W.
Ditto ditto	"	"	10	766.4	20.6	17.2	
Ditto ditto	"	23	10	764.3	16.7	17.3	Cloudy.
Ditto ditto	"	"	11½	762.8	16.1	15.2	Cloudy.
Ditto ditto	"	24	8	762.4	15.8	9.0	W.
Ditto ditto	"	"	9	763.0	15.2	10.4	
Ditto, on the Mahmoudyieh canal	"	"	11	763.6	15.2	14.3	
Terraneh	"	28	9	760.5	15.65	13.65	Vapours.
Terraneh (between) and Warden	"	"	2 p.m.	766.2	22.7	22.6	
Ditto ditto	"	"	3 p.m.	760.2	23.7	21.7	Light vapours.
Warden (south of)	"	29	7	769.3	15.8	12.6	
Ditto ditto	"	"	8	769.6	16.3	13.2	
Boulak	Feb	15	7½	761.2	20.4	10.0	Foggy, N.
Ditto	"	"	9½	760.3	16.6	14.5	N. breeze.
Cairo, Hot. d'Orient, 2nd story	"	16	11	764.4	17.1	16.5	N. breeze.
Ditto ditto	"	"	5 p.m.	763.7	17.1	16.0	
Ditto ditto	"	17	8	764.5	13.7	10.4	N. breeze.
Ditto ditto	"	18	8½	765.1	16.2	12.5	
Ditto ditto	"	"	11	764.9	17.1	16.8	
Gizeh	"	13	4 p.m.	763.6	24.9	24.7	S. breeze.
Ditto	"	14	7½	762.7	20.2	19.0	High wind, S.
Bedreheim, port of Memphis	"	12	6 p.m.	763.8	20.8	19.1	
Ditto	"	13	7	763.9	15.7	8.1	
Ditto ditto	"	13	8	764.5	13.4	10.6	
Ditto ditto	"	"	1 p.m.	764.1	21.2	24.4	
Dashour (Nile opposite the pyramids of)	"	12	4 p.m.	761.9	23.0	21.2	
Beni-suef	"	11	10½	765.1	19.0	15.0	
Ditto	"	"	11½	764.5	21.6	21.3	
Abou Girge (between) and El Fent	"	10	2 p.m.	764.5	21.0	24.5	
Djebel Teir, 4½ miles above the convent	"	9	8½	766.3	15.5	13.4	N. breeze.
Ditto 2 miles above the convent	"	"	11	766.7	16.9	13.1	N. breeze.
Minieh	"	8	1½ p.m.	761.2	25.2	2.7	Vapours, S.
Ditto	"	"	3 p.m.	760.9	22.9	22.1	Vapours, S.
Ditto ditto	"	"	4½ p.m.	760.9	24.8	24.0	Clouds, N.
Beni-Hassan	"	"	7	761.3	15.4	11.2	Light vapours.
Ditto	"	"	11½	762.1	22.4	23.2	Light vapours, S.
Ditto Tombe	"	"	7½	755.5	14.2	12.7	
Ditto ditto	"	"	8½	763.3	15.3	14.3	
Ditto summit of the cliff	"	"	9	761.8	20.8	14.3	S

	Month	Day	Hour.	Barometer Milli- metres.	Thermometer Centigrade.		Sky and Wind.
					Temper- ature of the Mercury	Temper- ature of the Air.	
Rhôda, near Melawi	Feb.	7	3½ p.m.	761.6	0	0	
Tomb of Sheikh Abou Said (Nile opposite) south of Melawi . . .					25.9	26.4	S.
Manfalout (between) and O'Syout . .	Jan.	6	8½	762.0	22.9	24.7	Vapours, S.
Ditto ditto				764.8	15.3	10.3	Vapours.
O'Syout (Hamra, port of)	Feb.	5	10½	763.8	14.7	14.5	Vapours, N.
Ditto ditto				761.9	20.3	17.2	Vapours.
Ditto ditto		6	6½	763.0	17.2	4.3	
Ditto ditto				762.6	16.2	6.3	
Ditto ditto			11	763.5	20.6	16.4	
Ditto, upper range of tombs			10	752.3	15.8	15.8	
Aboutig		5	11½	763.5	16.8	15.9	N.
Djebel Sheikh el Harideh (6 miles above)		3	6½	763.3	15.8	7.1	
Ekmim (3 miles below)	Jan.	8	3 p.m.	758.8	16.2	16.4	Overcast.
Ditto ditto	Feb.	2	5 p.m.	761.5	22.6	21.3	
Ditto ditto		2	2½ p.m.	762.2	21.7	21.2	N.
Ditto ditto			3 p.m.	761.5	23.3	22.2	
Girgê, on shore	Jan.	9	2 p.m.	758.0	17.1	14.0	N.W.
Ditto, the river		31	5½ p.m.	763.7		18.8	N. breeze.
Ditto ditto	Feb.	1	6½	764.0	17.0	6.0	
Ditto ditto			3½ p.m.	762.6	21.2	19.4	Clouds, N.W.
Belieneh (between) and Sheikh Hamad .	Jan.	10	12½	760.2	17.8	15.2	
Belieneh		31	2 p.m.	764.4	21.4	21.7	
Saklou Abou Zabab		10	4½ p.m.	759.8	20.5	16.2	
Belieneh (between) and Farshout . .		31	7	760.0	15.7	4.7	
Ditto ditto			10½	767.0	14.8	14.9	
Farshout (between) and Keneh		30	12½	764.3	19.1	17.3	
Ditto lower down			2½ p.m.	764.3	22.2	20.8	
Keneh (lower down)			9	765.2	13.8	12.4	Strong N. wind.
Keneh		29	7	759.2	12.2	9.9	
Ditto			12½	759.7	16.4	16.7	
Thebes, below Gournah		13	9	762.7	15.3	11.2	
Ditto ditto		28	3 p.m.	758.4	21.2	20.4	
Ditto, opposite Gournah		13	11	762.7	17.4	15.6	High wind N.
Ditto, Gournah, on shore		26	3½ p.m.	757.6	17.7	16.4	
Ditto ditto the river		27	6½	760.5	14.4	5.2	Breeze N.
Ditto ditto ditto			1 p.m.	759.6	20.6	20.2	
Ditto, opposite Karnak		28	6½	759.7	13.7	5.6	
Ditto ditto			7½	759.4	12.4	6.8	
Ditto ditto			12	759.4	15.8	14.9	
Ditto, opposite Louxor		13	12½	761.1	17.1	16.2	
Ditto ditto			4½ p.m.	760.5	19.2	17.7	
Ditto, entrance of tomb No. 10 of Amunmeses, Vale of Kings		27	10	753.5	23.4	15.5	N. breeze.
Ditto, Pass of Sheikh Abd-el- Gournah, between the Vale of Kings and that of Assasif			12	743.4	18.9	13.6	
Ditto, summit of Djebel Sheikh Abd-el-Gournah, east of the pass . .			12	741.2	17.1	13.0	N.
Hermouth		14	9	761.8	15.5	13.2	
Esneh		16	8	757.6	16.4	15.0	Cloudy.
Ditto			5 p.m.	755.1	19.5	17.7	Cloud, N. breeze.
Ditto		25	8	758.4	16.9	13.6	Cloudy.
Elfon			10½	758.6	16.2	14.7	
Ditto (short distance above)		24	12	758.4	17.7	17.4	Cloudy.
Ditto			8½	759.0	16.2	15.3	
Djebel Seiseleh (on shore)		18	8½	757.0	17.2	14.4	N.
Ombos, at the great temple		23	12	758.7	23.3	19.8	N.
Ditto, the river		22	2 p.m.	755.3	20.9	20.6	
Ditto (a little above)			3½ p.m.	757.3	20.8	19.2	N.
Ditto (higher up)		19	8½	758.9	18.2	12.8	Vapours.
Ditto ditto			1 p.m.	757.6	19.6	20.8	Cloudy.
Assouan			3 p.m.	755.5	21.6	20.3	
Ditto		20	7½	757.0	17.7	10.5	
Ditto			4½ p.m.	755.5	22.2	19.4	Cloudy.
Ditto (quartz quarries, 2 miles north)		21	7	754.6	18.0	15.2	N., a few clouds.
Philæ, lesser temple			8½	753.4	16.6	16.2	N.
Ditto		20	11½	754.5	19.6	19.3	
			1½ p.m.	751.6	20.1	20.0	

it is highest, the same river carries in a second a body of 482 square metres of water out of the Lake of Geneva, and 649 before it leaves the territory of Switzerland.

As, however, a comparison of the Rhône with the Nile may be thought too ambitious, I may be allowed to mention the Neva, the enormous size of which will be confirmed by all who have once seen it. Its depth is 54 feet at the eastern end of St. Petersburg; its speed much greater than that of the Nile; and its breadth equal to the Bosphorus. Still, from the very careful measures taken in 1825 by General Destrein, the body of water is 116,000 cubic feet in a second,* or 4036 cubic metres—a quantity still 2000 times less than that of the Nile, as given by Mr. Linant.

The inferior level to which the waters sunk in 1798, 1799, and 1800 was regularly 3 cubits and 10 digits of the scale in the nilometre at Rhôda, or 1·848 above zero.† That zero itself is 3·342 metres above the low-water level of the Mediterranean Sea, which shows the lowest level of the Nile to be still 5·19 metres above the sea, and 4 metres below the level I observed in February.

During the three years the French kept Egypt under their rule, the floods reached 17 cubits 10 digits, 16 cubits 2 digits, and 18 cubits 3 digits above the zero in the Mekyas at Rhôda, which implied an actual rise of 7·58 metres, 6·85 metres, and 7·96 metres for those three years. A rise of 8 metres is considered as boding fine crops; 7 metres make them but indifferent; while a rise of 9 metres is considered as injurious to some places. It is 6·5 metres at Manfalout,‡ and 1·22 metres only at Rosetta and Damietta. The height of the flood increases as the valley becomes more contracted—a proportion quite necessary, as the banks are higher in the Saïd than in the middle country.

French engineers have found that the level of the soil does not rise more than 126 millimetres in a century from the muddy deposits. That quantity is not the same everywhere. Sir Gardner Wilkinson§ estimates approximately the depth of the soil to have increased 9 English feet near Elephantine in the space of 1700 years, 7 feet at Thebes, 3 feet 10 inches at Heliopolis and Cairo, and a trifling amount at Rosetta. This is equal to 160 millimetres in a century at Elephantine, 126 at Thebes, and 69 at Cairo. Sir Gardner Wilkinson's actual

* *Vide Journal of Royal Geographical Society*, vol. v. p. 3.

† While it sinks to that level, it preserves a depth of 4·6 metres.

‡ Wilkinson, 'Modern Egypt.'

§ 'On the Present and Former Levels of Egypt,' *Journal of the Royal Geographical Society*, London, vol. ix. p. 432.

survey of the country fully corroborates those reasons by which Volney proved there had been, during historic times, no change either in the outline of the coast, the mouths of the river, or in the extent of the Delta. Some travellers have even asserted that it had sunk.*

The bed of the river is enclosed within banks, the height of which increases as you travel farther south. I found them in January 10 or 12 feet above the water, reaching even 25 and 30 feet beyond Thebes. The banks are generally steep, and in some places overhang the river. Contrary to the general rule, they are higher than the flat country at a distance from the water—so much so that they are seldom covered by the floods, while the level of the country is 4 metres lower in the neighbourhood of O'Syout. A time will perhaps come when those differences will be lessened by the accumulation of mud.

“The priests told me,” says Herodotus (Second Book of his ‘Histories’), “that in the time of Moeris the Nile irrigated all Egypt below Memphis as often as it rose only 8 cubits (4·2 metres), and this, too, although no more than 900 years had elapsed since the time of Moeris’s death. But nowadays the Nile does not flood that same extent of land unless it rises at least 15 or 16 cubits.” From these words many have been led to fear that the time will come when the land of Egypt, gradually raised by the muddy deposits above the level of the floods, will become barren, and the villages no more converted into islands, as they were in the days of Herodotus. But we must bear in mind that the Nile, as long as it preserves the same body of waters, raises the bottom of its bed in the same ratio as it does its banks, and that, covering now a greater extent of country, it increases the quantity of arable lands in Upper and Middle Egypt. By digging the soil at the base of the oldest buildings in the ruins of Thebes, Sir G. Wilkinson found the width of arable land increased 1900 feet west of the colossal statues of Amunoph III. in a space of 3260 years, being raised more than 2 metres at the same time. The result has very likely been the same on the eastern bank.

* According to Prof. Chaix the general fall of the Nile between Philæ and Cairo is very great, when compared with that of other large rivers, being about 78 feet per mile between Philæ and Assouan, where the cataracts occur. The observations of Prof. Chaix extend over a distance of about 724 miles (according to his data in kilomètres and reckoning from Rosetta), which is equal to $3\frac{1}{4}$ times the length of the Thames; those of Sir Gardner Wilkinson (lately read before this Society) extend to Gebel Berkel, or somewhere about the same distance. A comparison of the results obtained by these two geographers might be desirable. Further up the Nile observations of its altitude become more scanty, and at Khartûm terminate altogether; the Bahr el Azrek is, however, measured from Rosetta to its source, a distance, according to Mr. Petermann, of 2630 miles.—ED.

The most certain idea to be derived from Herodotus's words is. that in his time *a rise of 15 or 16 cubits was necessary to water the land*, which is equal to 7·8 metres and 9·2 metres, if we reckon that Herodotus used the royal cubit of 525 millimetres; or 6·8 metres and 7·2 metres, if the vulgar cubit of 450 millimetres. As these quantities are still to be found as the actual rise of the Nile, they give us a proof of Herodotus's accuracy. As the change has been but trifling within the twenty-three centuries elapsed since his visit to Egypt, I see no reason to believe that it had been so much greater (according to the priests) during the nine centuries previous to his journey. They had, besides, an interest in foretelling as impending that dreaded barrenness which could only be arrested by their prayers and sacrifices.

XIV.—*The Isle of Skyros.* By THOMAS GRAVES, Esq., Captain of H.M.S. Volage. Communicated by Rear-Admiral Sir Francis Beaufort.

[Read March 27, 1849.]

ALL the accounts that have been left of the Isle of Skyros by the ancient historians and geographers have been so well epitomised by Dr. Cramer in his 'Ancient Greece,' and Tournefort and Colonel Leake have so faithfully described the position of the town, and of the ancient remains still to be traced in its neighbourhood. that it would be presumptuous in me to alter their language or to add to their statements; and therefore, in the following notices, I shall only attempt to bring down their descriptions to the present day, or to supply such facts as were not within their reach to obtain. But in order to introduce the reader fairly into the island, I shall begin with a quotation from the Colonel's 'Travels in Greece.'

"The town of St. George stands within a few miles of the N.E. extremity of the island, and covers the northern and western sides of a high and rocky peak" (605 feet above the sea), "which to the eastward falls steeply to the beach." The plain to the N.W. "is grown with corn, vines, and figs, and is refreshed by a small perennial stream, watering many gardens as well in the plain as a little valley above it, where the oaks and planes, the walnut and other fruit-trees, which shade the bank of the stream, give this little district an appearance very different from that of the dry and naked Cyclades." It may be added that, in comparison with them, this island, in point of scenery and capability, is a Paradise.

"On the table-summit of the rock which crowns the town are the ruins of a castle, inclosing many houses, which are now

abandoned. The castle was the site of the Acropolis of the ancient city of Skyros, justly described by Homer as the lofty Seyrus. Remains of Hellenic walls are traced round the edge of the precipices, particularly at the northern end of the castle; others halfway down the peak just include the town in that part, and in another place a piece of wall occurs among the modern houses. But the greater part of the ancient city was to the eastward, towards the sea. In this direction there remains a large semicircular bastion, almost entire, and built of horizontal courses of masonry, which diminish in the height of each course towards the top. From thence the wall is traced along the slope above the sea as far as a round tower, which is still standing to half its height; about fifty yards beyond it are the remains of another, and from each of them a wall is traceable down the slope as far as the cliffs which overhang the sea."

The present town extends from the summit of the Acropolis to the base of the hill, and comprises the most miserable collection of habitations possible, separated from each other by narrow lanes, the feeding and lounging-places of pigs in summer, and during the winter perfect gullies of filth.

Within the Acropolis—which at a more modern date was fortified by the Venetians, as the lanky and unhappy lion, figured in marble and inserted in the wall above its present entrance, sufficiently indicates—all is ruin and desolation, for the inhabitants, no longer dreading piratical intruders, have almost abandoned their former stronghold and place of refuge, which, between winter torrents and occasional earthquakes, is fast crumbling into decay. The effects of an earthquake that occurred in 1840 are apparent; and the Church of Episcopis, though evidently a substantial edifice, was so shaken as to be now deserted. Several houses built on the edge of a precipitous cliff were overturned, and in their fall destroyed the path leading to the only place of security. A new approach was indeed immediately constructed, but its outer wall is already tottering, and a heavy rain would place it in great jeopardy.

The lower town, built on a more gradual slope, and yearly increasing, contains the whole population of the island. The houses, as is usual among the Greek islands, are flat-roofed; "the terraces of the roofs," as Colonel Leake says, "are covered with a peculiar kind of earth found in the descent towards the plain, and which is said to possess the property of resisting the most continuous rain." The chimneys are, as he describes, still in the corners of the rooms; but the "earthen jars and pots, pewter plates and dishes," have almost disappeared.

A school-house was commenced a few years since by the Greek government, and its situation was well chosen, but the building has been for some time at a stand-still for want of funds, and its unroofed walls are conspicuous on entering the town.

In 1848 the population of the whole island was 2630 men, women, and children.

Four or five caiques only appear to belong to the place, which is the more extraordinary, as every requisite for building vessels of that scantling is at hand; and several loads of crooked timber, fit for their knees and timbers, are annually sent to Syra. Fir-trees, although not so abundant as in former times, are still sufficiently plentiful, and planks might be obtained with facility.

The oaks are used only for fuel, and, though many of them are of the *Velanidhi* kind, no use is made of the acorns.

No silk is now exported.

The vineyards scarcely produce sufficient wine for the consumption of the inhabitants. The grapes are small and ill-flavoured, apparently the result of carelessness and neglect in their cultivation. After a bad vintage, wine is procured from Kumi, a town on the eastern side of the Negropont.

From 40,000 to 45,000 kila of corn, wheat, and barley are annually exported; but the supply of the wax, honey, oranges, and lemons, enumerated by Colonel Leake, appears to have decreased. On the other hand, madder-roots are so much more abundant, that, instead of the 400 kantars mentioned by him, 1000 leave the island every autumn.

Sheep and goats were last year numbered at 15,000, and bullocks at 3000, of which only a small portion are exported—about 1000 of the former, and 100 of the latter.

Colonel Leake visited the island in 1806: it then belonged to the Turks, and the population was small, as compared to its extent. Fifteen years have elapsed since I first sought shelter there; and, according to my notes, it contained about 2000 souls, being then, as now, a Greek island, and yet its present population has only increased to 2630. With a fine healthy climate, a good soil, plentifully supplied in most parts with water, a good harbour for large ships, and numerous creeks in which coasting-vessels can anchor in safety, it appears strange that so little improvement, or so little increase of its inhabitants, have taken place. Now too it is free from piratical visits, to which, in troubled times, and from its position, it was peculiarly subject, and which the site selected for the town evidently proves; and, having been placed under the protection of a fixed government, it ought to have rapidly advanced in prosperity.

There is such a breadth of arable land, as compared to the

population, that one-half of the cultivated portion of the island is allowed to lie fallow for two years; so that what would appear to the casual visitor a well-cultivated district, would by a traveller in the following year be described as a dreary waste.

The superiority of the breed of Skyros goats, as noticed by Strabo, still maintains its ancient celebrity, and the flocks are numerous. The southern and almost uncultivated part of the island is their principal resort, where, herded among the rugged hills and sheltered ravines, wild shrubs and brushwood suffice for their food.

Its ancient marble-quarries, the treasures of which at an early period were in great request at Rome, are now deserted, and only to be distinguished by a searching eye. The localities of those that were discovered by us have been duly noted in the chart.*

As regards the inhabitants, the men are a fine, stout, and athletic race: but the women are the plainest that I have seen in the Greek islands.

Dr. Baxter, who has served with me for many years, and who has by long experience made himself fully acquainted with the sanitary state of the various districts that he has visited, has furnished the following valuable information as connected with the diseases prevailing in this island.

He states that the inhabitants are not so frequently attacked with fever as those of the other Greek islands, for which he thinks that the elevated position of their town, and the absence of all marshy ground and stagnant water, sufficiently account. It certainly does not arise from their cleanliness, either in person or clothing; and the females, unwilling to give up their ancient costume, envelope their heads in shawls and coverings even more preposterously than the Hydriotes, whose head-dress is notoriously ridiculous and uncomfortable.

The diseases to which they are most subject are rheumatism, thoracic affections, hæmoptysis, palpitation of the heart, and dyspepsia. The children, being never washed, are sickly and pale. Hernia is frequent among them, and is attributed by their mothers to their continual crying. But from what does the crying originate? Probably from neglect, hunger, or improper food. Both men and women have very bad teeth—the latter, before arriving at the age of 30, lose some of their incisors. As they advance in years many become blind from amaurosis, or cataract.

“Skyro,” Colonel Leake observes, “is divided into two parts, nearly equal, by an isthmus, which lies between Port

* About to be published by the Admiralty.—ED.

Akhili and the great harbour, called by the Greeks Kalamitza, and by the Italians Gran Spiaggia." Crossing this isthmus, $1\frac{3}{4}$ miles in length, by a rugged path, practicable only to the surefooted ponies for which the island is celebrated, traces of ancient terraces on either side of the valley will be discerned by the eye of an antiquary. In ancient times that whole space must have been fully cultivated.

The greater part of the southern portion is uncultivated, and, as the Colonel says, consists of "high mountains, which are intersected by deep gullies, and are rugged and bare except towards the summits, where they are clothed with oaks, firs, and beeches. The northern part of the island is not so mountainous, and all the hills bear corn, vines, and madder."

To describe the island more professionally, it may be called fifteen miles in length, in a N.W. and S.E. direction, and is divided into two nearly equal parts by a narrow isthmus.

Commencing at its N.W. extremity, off which a group of islets or rocks, known to the Greeks by the general appellation of Pothies, presents to the stranger a formidable barrier to a near approach. They are eleven in number, low, and surrounded by shoals and breakers, which stretch off $2\frac{1}{2}$ miles.

From the above point the coast trends in a S.E. direction $6\frac{1}{2}$ miles, as far as Prokolako-nisia (islets), and is almost inaccessible, being formed of sandstone ridges, which lie parallel to the shore, and only a few inches above or under water, so that, except at Palamarion and Glossa, there is no practicable spot at which a boat can land, unless in the most favourable weather.

This forbidding shore bounds to the eastward the finest plain on the island, that of Katà Kampos, which on the other side rises into hills of moderate elevation, the slopes of which, as well as the plain itself, are partially cultivated; but from the indolence of the natives, and the smallness of the population, their capabilities have never been fairly developed.

Port Molos, as it is called, lies nearly mid-way between Poreiá Point and the town, and may be recognised by its solitary windmill. It is formed by a parallel ledge of sandstone rocks, almost level with the sea, and only a quarter of a cable distant from the beach. It is, however, the resort of numerous caiques during the summer, though the depth within is from 6 to 9 feet only, and yet, from its proximity to the town, is much frequented. The entrance is so blind, that, without a previous acquaintance, a boat even would find it difficult to discover.

Convenient anchorage may be taken up off the town in summer, for then, the prevailing winds being from the northward, it is well sheltered. But the rock of St. Demetrius,

which lies three-quarters of a mile off shore, with only 3 feet on its shoalest part, must be avoided. Between the rock and the coast the depths are from 5 to 7 fathoms.

Proceeding southward from the town until reaching Port Akhili, a distance of 2 miles, the shore is skirted by outlying rocks, and again scarcely affords a landing-place for a boat, even under favourable circumstances.

From the base of Malla, and the hills between it and that on which the town is built, a low sandy plain, partially cultivated with vines, and a few fig-trees scattered among them, extends in an easterly direction three-quarters of a mile, the extremity of which is termed Poreiá Point, and is easily distinguished by two windmills, close to which are the several rocky islets previously mentioned. The rock nearest to the Poreiá Point is the largest; between it and the point vessels drawing too much water for the neighbouring little creek of Molos moor stern and stern, with hawsers to the shore on either side, and ride in security during the summer.

The sandstone rocks on the point, as also the rocks opposite, have evidently been quarried, and probably furnished the materials for the walls, being more easily worked than the limestone hills, which were nearer.

The road from the town to Kalamitza runs along this shore, and in one spot a short distance to the northward of Strongylo ancient chariot-ruts are discernible.

Port Akhili is resorted to by caiques and small craft during the winter, for then Port Molos is considered unsafe.

A fruitless search was made in this neighbourhood for ancient remains, unless the foundations of a round tower on a hill of slight elevation which separates Port Akhili from Strongylo Bay may be excepted.*

Two plains here extend across the island—one from Akhili to Kalamitza, which is laid out in corn-fields, and the other from Strongylo to Linaria Bay, where a few vineyards flourish.

Leaving Port Akhili, and continuing a south-easterly direction, the coast is of a most forbidding aspect, presenting to the eye a succession of stupendous cliffs, broken only by deep ravines, which in the winter serve as outlets to the mountain torrents of Kokhelas and its adjoining range.

This description equally applies after rounding the eastern extremities of the island, until we arrive at Tre Bouki, where the coast is diversified in appearance by several islands, which are evidently landships from the shore.

Lying at the base of Mount Kokhelas, which is the highest in the island, and 2566 feet above the sea, surrounded by

* Perhaps the form of this tower may give the name to the bay, as *στρογγύλος* means Round.

desert woody hills, with great depth for anchoring, and no fresh water, with narrow and difficult channels to beat through in northerly winds, and offering very imperfect protection in southerly gales, it is in every way inferior as a port to Kalamitza. Should necessity compel a man-of-war to enter this port, the only anchorage is off a stony beach on the shore of the island, and very close-to, in from 12 to 13 fathoms, remembering that the bank is so steep, too, that at $2\frac{1}{2}$ cables' lengths there are 17 fathoms.

After rounding Marmora Point we arrive in 3 miles at the Bay of Kalamitza, which has so long figured in modern charts under the various appellations of Grand Port, Gran Spiaggia, Port St. George de Skyro, &c., and affords the only anchorage for vessels of burden.

It is on the western coast. extensive, and tolerably sheltered from all winds, but, unfortunately, with a great depth of water.

There is no difficulty in discovering its position, as Skyropoulo, an outlying rocky islet of 617 feet in height, is conspicuously seen when approaching from the N. or S., and from the summit of which the entrance bears E.S.E. about 7 miles. Several rocky islets of moderate elevation lie off its southern shore, and to the westward it is protected by the long, narrow, barren island of Balaksa.

To the northward of this latter island there is a narrow channel, with an inconsiderable depth of water, and consequently only to be attempted in case of necessity; yet there coasting-vessels and small craft frequently seek shelter.

Abreast the valley which divides the island, and in front of its white beach, is the only safe anchorage; but there any vessel may ride in safety, if not afraid of the shore, and may moor in 10 or 12 fathoms. Farther out, and in deeper water, during the strong northerly winds which prevail in summer, she would probably be driven off the bank, which is steep. In winter the best berth is under the high land immediately to the southward of the isthmus, between it and the first rocky projection.

But the greatest recommendation of this bay to a sailor is its abundant supply of fresh water. About half-a-mile to the southward of the above anchorage, and close to the shore, will be seen an overshot mill, a few hundred yards above which an excellent spring bubbles up from the steep face of the mountain side. When the island was under Turkish rule, this water was collected in a fountain, which is now in ruins; but an inscription in Turkish and in modern Greek shows that it was constructed in the year 1799. The water now runs to waste, and the mill is likewise deserted.

From this anchorage the town of St. George is distant a

two hours' walk, and from thence fresh beef and mutton readily procured and conveyed to the ship at a reasonable price. Wood is also plentiful and cheap.

Some few and slight remains of antiquity may be found in this neighbourhood.

On the northern shore of the anchorage, and near the beach, there is part of a marble column, still erect, which measures 5 feet in circumference, and stands 4 feet above the soil. Several similar fragments were lying prostrate in its vicinity, as well as some large squared stones, which apparently formed the foundations of a small temple—very probably of that to which Tournefort alludes as having been dedicated to Pallas.

A few hundred yards higher up we found the arched cistern mentioned by Colonel Leake; but it appears to have been a work of the middle ages, to secure a supply of water during the dry season. It is 50 feet in length, and 18 feet wide; the arch fallen in, but with the stucco on the base and sides almost perfect.

Crossing a rocky point between these ruins and the isthmus, the summit and slope of which had evidently been once formed into terraces, we discovered at the base three sarcophagi with large white marble covers, weighing probably 10 or 12 tons each. Such massive remains, their primitive form, and their conspicuous situation, seem amply to confirm the opinion advanced by Tournefort, that on this spot stood the ancient city of Scyrus.

In the several small bays to the northward of Kalamitza, coasting craft and caiques occasionally seek shelter, but no vessel of any burden; and though the various openings in the coast, named Stinangali, St. Phokas, Oros, &c., appear inviting, yet the steepness of their shores and their great depth of water render them almost impracticable.

Saint Phokas has an anchorage sometimes taken by small vessels during the strong northerly winds of summer, not only to obtain shelter, but to replenish their water from a well close to the beach at the head of the bay. Near this well, on a point covered with trees, and amongst the foundations of a dilapidated chapel, may be seen some ancient blocks of marble, but too much unconnected to venture an opinion on the building to which they formerly belonged.

Fronting the southern slope of Mount Oros, and close to the shore, is Kolouros Islet, and then the Mermingia Rock; and 3 miles farther Kotsoulis Islet, which affords some shelter to Kalogria Bay; but the anchorage is only the summer resort of coasting craft.

Markesi Bay completes the circuit of the island. On a small hummock at its western extremity there are some middle-

age or Venetian remains, apparently the foundation of a tower; and on a slight eminence to the westward, close to the shore, we found several rock sepulchres. In this vicinity a large portion of the rock has been quarried away, but with so very gradual a slope towards the sea, that it would almost appear as if intended to be continued down to the water's edge, for a slip to haul up the boats.

Slight as is the information contained in these pages, I cannot conclude without expressing how much I am indebted to my indefatigable assistants, Messrs. Stokes and Wyer, for their zealous aid, not only in all the operations of the survey, but in our mutual endeavours to acquire a competent knowledge of the interior as well as of the hydrographic features of the island of Skyros.

XV.—*The Formigas Bank, near Santa Maria (Azores).* By Capt. ALEX. VIDAL, R.N. (Communicated by Rear-Admiral Beaufort.)

[Read 23rd April, 1849.]

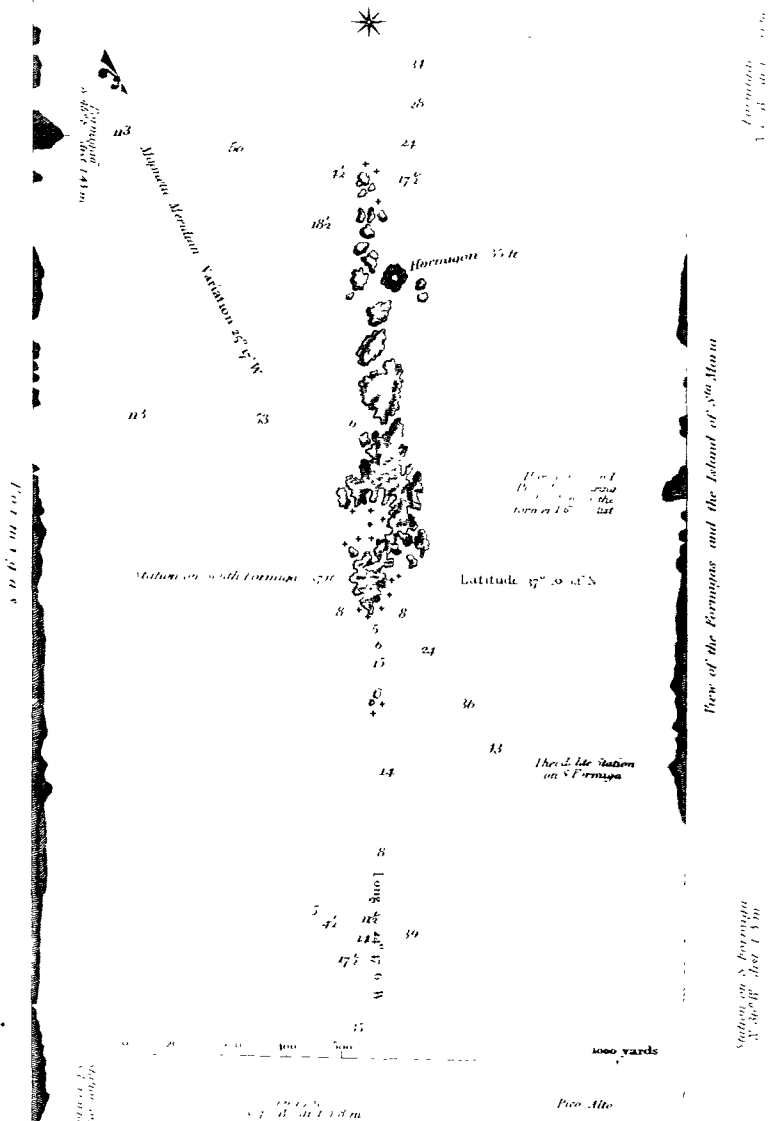
THE bank of the Formigas lies N. 45° 15' E. from the island of Santa Maria,* at the distance of 19·7 miles from Matos, its N.E. and nearest point.

It is formed by a submarine mountain of very irregular elevation, and which, traced to the depth of 200 fathoms, was found to extend 6½ miles from N.W. to S.E., by about 3 miles in greatest breadth.

Near its western margin there is a narrow cluster of black rocks, known as the Formigas, which are about 800 yards in length by 150 in extreme breadth; their relative direction being north and south. The southernmost of them for about 350 yards forms a rather closely connected mass, having a small bay on the west. The northern ones are more separated from each other, and all are comparatively of little elevation, but their profile exhibits a few hummocks. That on their southern extremity, which is 27 feet above low-water springs, afforded a theodolite station, at which the true bearings of some points and heights on Santa Maria and San Miguel were ascertained. It is in latitude 37° 16' 14" N., longitude 27° 47' 06" W., and from observations made upon it on two consecutive days of very favourable weather, the following true bearings are derived:—Pico-alto, the highest peak on Santa Maria,

* For an account of the Islands of Santa Maria and St. Miguel, with Maps, *vide* Mr. Consul Hunt's Papers in the fifteenth volume of this Journal.—Ed.

Formosa and distant view of St Michel



Fernando and east end of St Michel

Dell baratz Shoal

S. $40^{\circ} 37' 39''$ W.; Pico Castello, at the S.E. extremity of that island, S. $29^{\circ} 04' 09''$ W.; and Pico Vara, the highest land near the east end of San Miguel, N. $32^{\circ} 12' 21''$ W.; the latter peak being 38.1 miles distant, and Pico Alto 23.4 miles.

The magnetic variation at this station, from a mean of both days' results, on the 17th and 18th August, 1843, was $25^{\circ} 17'$ W.

The most elevated rock of the group, named by Tofiño Hermigon, is 35 feet in height, and stands on their eastern side, about 200 yards from the northernmost rock, somewhat more isolated than the others, and having an inclination to the southward. (See the very faithful views which are inserted on the chart, and give a representation of them far preferable to a description.)

With smooth water there is no difficulty in landing, particularly on the southern rocks, but in strong winds or a high swell the sea rolls over them all, leaving a black naked surface entirely devoid of vegetation. One hundred and thirty yards south of the southern Formiga is a small rocky shoal, some parts of which are visible at low water: the channel between it and the rock has 5 to 6, and 15 fathoms water over the ridge which connects them, the greatest depth being near mid-channel. Again, 600 yards or about three-tenths of a mile south of the South Formiga is another small rocky patch having $4\frac{1}{2}$ fathoms upon it at low water. It is steep to on the east, west, and south, but on a line drawn from it to the Formigas the soundings are very irregular, 11, 8, and 14 fathoms.

On the north the Formigas may be approached within a few yards, but a narrow ridge runs out from them in that direction for about 400 yards, with varying depths upon it, but no dangers. The outer extremity of this ridge has 18 fathoms on it, with the northernmost rock bearing *south* about 300 yards distant. Immediately north of this it drops quickly into 30 and then 50 fathoms. On the meridian of the rocks soundings extend off to the distance of one mile and eight-tenths. On the east and west they are quite clear, with deep water close up to them; but on the west, the edge of the bank is not more than half a mile off, and at the distance of 200 yards from them the depth on it will be found about 50 fathoms.

S. $47^{\circ} 07'$ E. $3\frac{1}{4}$ miles from the station on the hammock of the South Formiga is the western head of a very dangerous shoal named Dollabarats. It consists of two or three rocky heads or knolls which at low-water springs have only 11 feet water on them. At that time of tide their position is marked by several large white patches, which may be distinctly seen, especially so in bright sunny weather.

This shoal is near the southern end of a rocky ridge, which extends from it N. $15^{\circ} 30'$ E. 1 mile and 6-10ths. The soundings over it are most irregular, varying from 14 to 28 and 30 fathoms with 45 and 50 close to its edges; but there are no actual dangers upon it except those comprised within the dotted line which is drawn around the shoal. See the chart.

The whole bank of the Formigas, as we have already stated, is a submarine mountain, and its varied elevations approach the surface of the ocean in several places. The shoal of Dollabarats is however the most eastern of these ridges, and the mountain has a steep but tolerably regular descent from it to the N.E., E., S.E., and S.; the south-eastern slope being the most gradual.

The ridge next in extent to that of Dollabarats lies one mile and a tenth to the S.E. of the South Formiga. Its southern limit is on a line drawn from that rock to Dollabarats, and it runs from thence one mile N. 15° E., which is nearly the same direction as the Dollabarats ridge.

The least water found upon it was 16 fathoms, but the depths vary from that to 28 fathoms, beyond which it deepens abruptly on all sides. At its north end there are 18 fathoms, and next east 44. Off its south end are two detached patches very small, the one has 28 and the other 30 fathoms on it.

Another but smaller ridge occurs half a mile on the west side of Dollabarats, between it and that last described. It is nearly 7-10ths of a mile in length, very narrow, and the depth upon it ranges from 27 to 32 fathoms. Its general direction is about N. 10° E.

The quality of the bottom over the bank of the Formigas is principally rock, with frequent casts of fine white sand, broken shells, and small pieces of the branch coral common in our latitudes.

The Dollabarats shoal is a very insidious danger in smooth water, but in stormy weather the seas break over it with great violence.

It seemed desirable to ascertain whether this bank was connected with the island of Santa Maria at any fathomable depths, and a line of soundings was tried across the channel between them, but no bottom could be obtained with 300 fathoms of line.

A difference exists in the position of the Formigas as given by us, and that assigned to them by Tofiño in his '*Derrotero de las islas Azores*.' The great Spanish hydrographer states in that work that from the southern Formiga the Ponta Castello bears S. $24^{\circ} 30'$ W., and Pico Alto S. $34^{\circ} 30'$ W.; the former being $4^{\circ} 34'$, and the latter $6^{\circ} 07'$ less westerly than ours.

This discrepancy induced a repetition of our observations on the following day, and they gave the same result. The navigator may therefore place the utmost confidence in the integrity of our position.

In the same work the Spanish admiral writes thus on the subject of the Dollabarats shoal:—"The pilots of Santa Maria agree that there is deep water all about the Formigas, except to the S.E., where there is a shoal on which the sea at times breaks violently, but having searched for it and carefully sounded the bank with two of them on board who sought for the shoalest water, we nowhere found less depth than 15 fathoms."

The plan before us confirms the report of the Portuguese pilots too truly; our vessel was anchored close to the danger, and the boats traversed in all directions over the shoals at low water, during the greater part of a very fine day. A beacon flag was placed on the middle of the ridge connected with Dollabarats shoal, to enable us to fix the soundings; and it is hoped the chart will be sufficient evidence that the whole subject has been properly investigated.

Mr. Purdy, in his memoir of the North Atlantic, informs us, "that to the S.S.E. of the Formiga there is a danger which was shown on a chart of the Atlantic Ocean of 1766, but afterwards omitted in other charts from want of positive information as to its existence. This shoal was seen by P. Dollabarats, commander of the ship 'La Marie de Sebaure,' in 1788, on his return from Martinique to Bayonne."

We may here observe, that the rocks of the Formigas, and the breakers upon *them* and upon Dollabarats shoal, are frequently seen by the inhabitants of Santa Maria from their eastern cliffs. The Formigas were pointed out to us when at work there, and angles were taken to them by theodolite from two or three stations above those cliffs.

In the memoir by Mr. Purdy, just referred to, there is another danger reported in the vicinity of the Formigas, under the name of the Tulloch Reef, as follows:—"In 1808, Captain William Tulloch, in the brig *Equator*, of Portsmouth, New Hampshire, on a voyage from Madeira to St. Michaels, was alarmed by some of his crew seeing breakers. After altering his course, he still saw breakers ahead, and as it blew too hard to haul by the wind and weather them, he determined as his only chance to endeavour to push through among them. Accordingly, having taken in every sail excepting the foretopsail, he went to the foretopmast head himself, and coned his vessel safely through by luffing up and keeping away as he saw necessary. Captain Tulloch counted distinctly twenty-one

heads of rocks, none of which appeared to have much water over them, and two of the rocks show occasionally above water, in the wash of the sea. Their extent the Captain thinks did not exceed half a mile from North to South, and was still less from East to West. They bore E.N.E. by compass, from the highest rock of the Formigas then in sight, distant about 10 miles, and appeared very black below water. The breakers on the Tulloch Rocks have been stated to have been seen several times since 1808; among others by the Ayrshire, bound from the Clyde to Demerara. Mr. Ferguson, the mate of that ship, gives their situation at about *nine* miles E.N.E. by compass from the Formigas. Captain J. Henderson, commanding the ship Fortescue, from Mauritius to London, saw the Tulloch Rocks on the 17th April, 1829. Breakers were observed for half a mile East and West. The greater l'ormiga and breakers in one bore W.S.W. (by compass), the former about four leagues, and the latter two miles distant. There appeared to be several heads near the surface of the water. A westerly wind and a heavy groundswell prevented sounding."

Such is the principal evidence collected by Mr. Purdy for the existence of this danger, but he adds—"Notwithstanding all that has been asserted as to the existence of this reef, it was not found by Captain Wilkes, in 1838, as the following extract from his work will show:—"On the night of the 13th September we laid by just after passing the north end of St. Michaels, in order to examine the position of the Tulloch Reef by daylight. We passed within a mile and a half of its reported position, but saw nothing of it, although the sea was running sufficiently high to have made a heavy break on it if it did exist.'"

From the report of Mr. Henderson, commander of the Fortescue, to the Secretary at Lloyds, on this subject, some application appears to have been made to the Admiralty, for we have in our possession a copy of Mr. Henderson's letter to the Secretary, and also a copy of a letter from Captain Marryat to his Commander-in-Chief in relation to this danger, which it seems he had received orders to seek and examine. He dates his letter from His Majesty's ship *Ariadne*, in Plymouth Sound, 18th July, 1829, and therein makes the following communication:—"On the 8th inst. we arrived off St. Mary; and, on the ensuing morning, being a perfect calm and the Formigas rocks about five or six miles to the eastward, I dispatched Mr. Thomas (Master) with his assistants in the first and second cutters to ascertain the existence of the reef described to have been seen in that direction. A light breeze springing up in the forenoon, I followed the boats in His

Majesty's ship 'Ariadne,' running 18 miles from the Formigas, and the next day beat up to within three miles of the above rocks, and again bore up, on the track of the supposed danger, until they were out of sight from the mast-head."

So soon as the survey of the Formigas and the whole bank on which they stand had been completed, our attention was directed to this reported danger.

Captain Tulloch of the 'Equator,' and Mr. Ferguson of the 'Ayrshire,' both state the reef to bear E.N.E. by compass from the Formigas, and nine to ten miles distant. Captain Henderson of the 'Fortescue' says the greater Formiga and the reef were in one bearing W.S.W. by compass, the former 4 *leagues* the latter 2 *miles*, or as before. The shoal 10 miles E.N.E. by compass from the Formigas. The search was therefore commenced on that line of bearing, and starting from the Formigas, was carried out under steam $14\frac{1}{2}$ miles until they were lost sight of. The vessel on an average was stopped at every mile and a quarter, and soundings tried for with 200 fathoms of line. There were look-outs at the mast-heads and on the paddle-boxes, the former about 90, the latter 27 feet above the sea. She then returned to the Formigas, traversing across the line of bearing previously carried out, making trials for soundings as before, but no soundings were obtained, nor was there any indication of shoal water.

On the 20th August the assigned position of the danger was again passed over with look-outs as before, but without using the lead. On the 25th the space was for the third time traversed, on lines not previously described by the vessel, and extended to the distance of 21 miles to the E.N.E. of the Formigas, the lead kept going at intervals to the depth of 320 fathoms.

Finally on the 29th August another traverse was made across the E.N.E. bearing to a distance of 12 miles from the Formigas, cutting in between the previous tracks and trying for soundings, but limiting the lines to 200 fathoms. There was not throughout this search the slightest indication of a shoal.

We must express our opinion upon this reputed danger, as formerly upon the apparently well authenticated statements relative to the Aitkin's rock. It looks very like a whale, but seeing the great difficulty there is in discovering small rocks beneath the surface of the ocean, we by no means presume to assert that Tulloch's reef does not exist, but we entertain a very decided opinion that it will not be found in the position which has been assigned to it.

Before leaving this subject we would urge upon sea officers, to whatever service or nation they may belong, the great benefit

they will confer on society at large, and their own profession particularly, if, when they do fall in with dangers of the above description, they would make more sacrifice for their *investigation*. The non-verification of such dangers when fallen in with, by every means in the seaman's power, appears to us a dereliction of duty—a great public wrong.

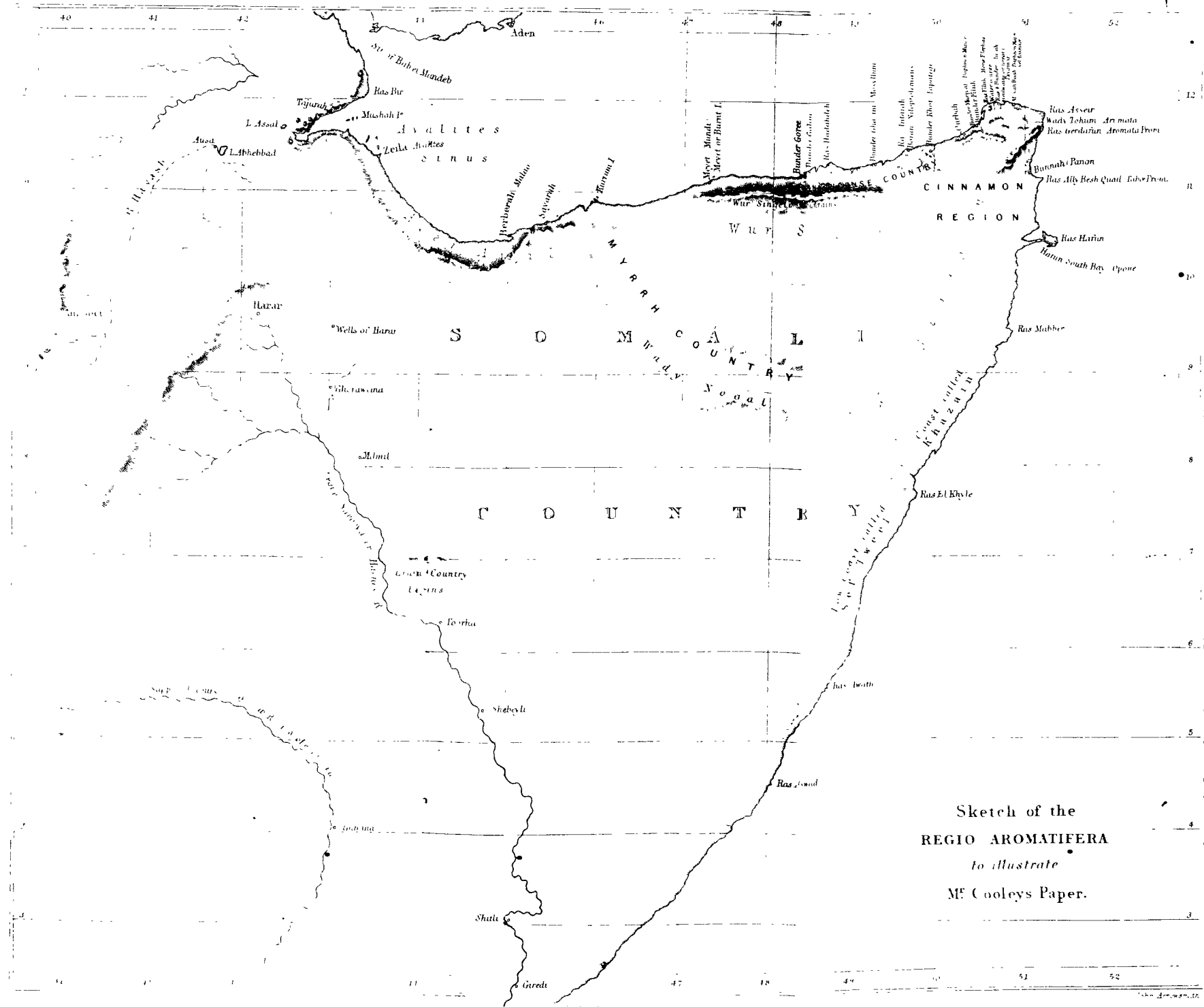
To find a sunken rock in the ocean with such uncertain data as many reports of them afford, is a very difficult matter; and the attempt to do so is attended with very great trouble and very great expense.

XVI.—On the *Regio Cinnamomifera* of the *Ancients*. By W. DESBOROUGH COOLEY. Communicated by Admiral Sir Charles Malcolm.

[Read April 23, 1819.]

WHEN we look at the eastern angle of Africa as represented in ancient maps, and see the successive portions of it throughout an extent of 600 miles, on the southern side of the gulf of Aden, marked as the *Myrrh country*, the *Frankincense country*, and the *Cinnamou region*,—the extreme eastern point being at the same time named *Aromatu*, or *Fragrant gums*, we cannot avoid concluding that the whole region in question was known chiefly as the source of those odorous productions from which its several appellations were derived. A geographical nomenclature so significant, and of such extent, is too remarkable to be passed over without explanation; yet what explanation does it admit of, except that it indicates the objects of a commercial intercourse carried on with a land otherwise nameless and devoid of interest? The African trade in spices and aromatic drugs was concealed for ages by the jealousy of those through whose hands it passed, and it was not till the monopoly of the Arabs in those seas began to yield to the activity of the Greeks and to the Roman arms, that the course of the native traffic became fully revealed to view. It is the purpose of this paper to show that the aromatic productions named above—cinnamon in particular—were obtained chiefly from the northern part of the country now possessed by the Somáli, at the eastern angle of Africa; and that the trade in those productions may be traced back to a very early period of history.

The writers who have hitherto given attention to the spice trade of the ancients have been all misled, more or less, by the supposition that the name cinnamon has, in all times and places, been invariably given to the same commodity. In order to avoid as much as possible the fallacies arising from



Sketch of the
REGIO AROMATIFERA
to illustrate
Mr Cooleys Paper.

fluctuation in the use of words, we shall here preliminarily glance at the history of cinnamon, and the derivation of its name. If it were once admitted that the only true cinnamon is, and always has been, that of Ceylon, then of course it would follow that the ancients were mistaken or deceived when, having the best cinnamon, they supposed that it was the produce of Africa. But the fact is, that there are several species of laurel capable of producing what might be called genuine cinnamon. Besides the *Cinnamomum Zeylanicum*; the *Laurus Cassia* of Malabar, which is perhaps a variety of the former, and the *Cinn. Tamála*, the leaves of which (*tamála-patra*) furnished the malabathrum of the ancients; we find also the *Cinn. aromaticum*, a native of China,* the leaves and slender stalks of which are eminently aromatic; the *Cinn. dulce*, likewise in China and Japan;† and the *Cinn. Loureirii*, which grows on the mountains to the west of Cochin China and in Japan.‡ This tree yields a cinnamon more exquisitely flavoured and much dearer than that of Ceylon, and also the “cassia bud” of commerce.

It appears certain that the cinnamon of Ceylon was still quite unknown to commerce in the sixth century of our era, and that even in the thirteenth the Cinghalese themselves gave it little attention. But we cannot suppose the Chinese to have been equally heedless of the riches scattered by nature over their hills, or remiss in turning such advantages to account; and indeed there is good reason for presuming that they were the earliest dealers in this spice. The Persian name for cinnamon is *Dārčūn*, which signifies *Chinese wood*; and as this name has been adopted in the languages of India with little or no change, it is evident that the article so called arrived in the latter country by the overland route, or through Persia.§ But considering the early development of Chinese industry, and the antiquity of the commercial routes through Central Asia, we cannot help inquiring whether this Chinese merchandise never reached the shores of the Mediterranean sea. The earliest mention of cinnamon occurs in the Book of Exodus, xxx. 23; but whence the spice came, we have no means of conjecturing, beyond what the name itself may suggest.

The Hebrew word *kinamon* is said by some to be derived from the Arabic verb *kanima*, to have a strong or foul smell—

* Nees von Esenbeck, *Systema Laminarum*, p. 52.

† Idem, p. 62.

‡ Idem, p. 65.

§ Darasini is found in Sanscrit, in the *Amara Cocha*, but must be regarded as a foreign word. The same elements, combined according to the analogy of the Sanscrit language, would make *Sinadaru* (Lassen, *Indische Alterthumskunde*, vol. i. p. 280). The Sawahili, on the eastern coast of Africa, learned the name in the latter form, probably at a very early age: hence their *Sinadalo*.

a derivation the flagrant absurdity of which is inconsistent with the fundamental laws of language.* Besides, the Arabs, to whose language the verb *kanima* belongs, have never employed its supposed derivative, but use, in a general sense, *kirfah* (rind or peel), which is a true Semitic word, and not derived, as is generally stated, from the Greek *κάρφος*.† As language springs directly from man's intellectual constitution, and the desire to make known his thoughts: it is impossible to conceive a primitive growth of words not in conformity with the plainest common sense; and so strict is the analogy between different languages in the formation of words, that we cannot admit of an affiliation of terms adopted in Hebrew but repudiated in Arabic.

But again, we are told that cinnamomum is derived from the Malayan *kashiomanis*, which signifies sweet wood.‡ Now, to say nothing of the torture and mutilation necessary to change the latter word into the former, what can be more ridiculous than to seek the derivation of a word used on the shores of the Mediterranean 3000 years ago, in the Malayan, which we know only as a modern language? Or how did this solitary Malayan term find its way into Phœnicia, without leaving a trace of its passage through India, Persia, or Arabia?

Cinnamomum, cardamomum, and costamomum are apparently compound words, denoting so many species of amomum; and indeed that they were so regarded may be inferred from the language of the poet, who speaks of cinnamon under this general name:—

“Internis etiam procul undique ab oris
Ales amica deo largum congegissit amomum;”§

and as we are informed by Herodotus that cinnamomum was a word borrowed by the Greeks from the Phœnicians, we may infer that the same remark extends to amomum also. But the Hebrew *ham* and the Arabic *hamámá* (something *hot*, or *spice*) point out at once the origin of the word amomum, and explain why the Hebrew kinamon became in a kindred language kinamomon. With respect to the first syllable of this name, Dr. Vincent supposed it to be derived from *keneh* (קנה), a cane, pipe, or tube, as if kinamomum signified pipe-amomum. But to this it may be objected, that the name in question, to

* Rosenmüller, Scholia in Vet. Test., p. 598.

† *Κάρφος* means *haum* or *dry stalks*, and not simply *twigs*. The Arabic *kirfah* signifies *peel* or *rind*, and, with the nunnation, is pronounced *kirfaton*, the *κέρπαθον* of Stephanus (De Urbibus, voc. Abaseni).

‡ Karl Ritter, *Erdkunde von Asien*, th. vi. p. 127. Garcia de la Huerta derives Cassia from the same word: *Histoire des Drogues*, p. 43.

§ Rufus Festus Avienus, *Descr. Orbis Terræ*, 1127.

whatever language it belongs, ought to serve the ends of language, by marking distinctly the object so named, but cinnamon appears to have been brought to market in early times in unpeeled twigs; and if, on the other hand, it were peeled off, then it had the rolled and tubular form in common with cassia, so that in neither case could it have been appropriately called pipe-amomum.

An ingenious, and by no means unlikely, explanation of the fables in which the origin of cinnamon was involved by the early Greek writers, who relate that it was taken from the nests of birds, which had collected it in unknown regions, is suggested by Bochart. He supposes that the Greeks were deceived by some popular Phœnician etymology playing on the word כִּנֶּן (*kinneen*), to build a nest.* The fable, in short, originated in a quasi derivation, and proves at once the antiquity of the word, and the foreign origin of its first and disputed element.

The only explanation then of the word cinnamon which does not savour of arbitrary etymological fancies, and which accords strictly with the principles regulating the formation of words, is that which considers it as meaning simply Chinese amomum or spice, and thus differing only by a slight and natural modification from the Persian name *darchini*, under which the spice in question was probably received by the Hebrews and Phœnicians.† The names of cassia occurring in the Scriptures, *ketziah* and *kiddah*, are decidedly Semitic, and derived from roots signifying, respectively, to peel or strip off the bark, and to cut in pieces.

From these preliminary considerations, we shall now proceed to the examination of those ancient writers who speak of the trade in cinnamon; and first of all, Herodotus informs us that, "the most southern inhabited land is Arabia, which alone produces myrrh, frankincense, cassia, cinnamon and ladanum."‡ Now it must be observed that the name Arabia was not confined by Herodotus to the peninsula so called at the present day. According to his views, the Arabian Gulf, or Red Sea, did not separate Asia from Africa, or Arabia from Egypt, but entered into Arabia, which was divided from Libya by the valley of Egypt, or, in general terms, by the Nile. And this mode of speaking remained in use for centuries after, for the country southwards, as far as reference could be conveniently made to the Nile; Libya being on one side of the river,

* *Geographia Sacra*, p. 792.

† This is the etymology preferred by Garcia (*Hist. des Drogues*, p. 94). See also Nees von Esenbeck, *Disputatio de Cinnamomo*, p. 13. כִּנֶּן China, is given in Frey's *Lexicon*.

‡ Herod., iii. 107.

Arabia on the other. When the Greeks, however, under the Ptolemies, began to frequent the Red Sea, they found a new name, Troglodytica,* for the southern portion of its western shores, so that with them Arabia extended up the right bank of the Nile as far as Upper Ethiopia, and then their knowledge of the country southwards was confined to the maritime tract named Troglodytica. But this name was unknown to Herodotus; and a critical examination of his words will show that he conceived the line of demarcation formed by the Nile between Libya and Arabia to be continued in the same direction as far as the southern ocean; so that by Arabia, in the passage just quoted, he means the eastern angle of Africa.

For, in the first place, he says that it was the most southern point of the habitable earth. Now for centuries after Herodotus it was believed that the most southern known point was at the extremity of the cinnamon country in Africa;† but there is no trace of such an opinion entertained with respect to peninsular Arabia. The ancients knew that beyond the entrance to the Red Sea, the coast of the Arabian peninsula went eastwards; but with respect to the coast of Troglodytica, its direction between south and east appears to have been a matter of doubt even in the time of Strabo.‡ Secondly, Herodotus says, that the country producing the cinnamon, and whence it was conveyed by the birds to their nests, was supposed to be that wherein Bacchus was nursed: and this country, as he elsewhere informs us, was situate in Ethiopia above Egypt § Thirdly, the winged serpents guarding the cassia, are said by him to be the same which from time to time invaded Egypt—a statement implying that there was no sea interposed between the latter country and the region of Cassia. | Fourthly, among the distinctions of the Aromatiferous Arabia, the historian mentions that it had two kinds of sheep; the tail, in the one kind, being three cubits long, and in the other, a cubit in breadth. ¶ Now it is remarkable that nearly 2000 years after Herodotus, the same observation should have been made respecting the sheep at Zeilâ by the Bolognese traveller de Varthema: “they have,” he says, “one sort, the tail of which weighs 15 or 16 lbs.; the head and neck

* The land of the Troglodytes, or dwellers in caves.

† Strabo, II. i. p. 72 of Casaubon's edition.

‡ Suabo, xvi. 4, p. 763; compare p. 779. Groskurd, the able German translator of Strabo, follows Gosselin in supposing that these two passages refer to two different cinnamon regions, the one African, the other Arabian. There is not the slightest ground for such an opinion. The cinnamon region, the most southern inhabited land, was a fixed point in Strabo's geographical system (see Lib. II. i.). Besides, his doubt whether that region lay south or east from the Straits, shows plainly that it was on the southern side of the Gulf.

§ Herod., ii. 146.

¶ Herod., iii. 107.

¶ Herod., iii. 113.

black, the rest white; and another sort, white all over, the tail of which is a yard long, and turned up at the end.”* As the country to which this relates, has, from time immemorial, supplied Yemen with live stock and provisions, we may naturally look to it for the original breeds of the flocks and herds now scattered through Arabia. But fifthly, the following passage is alone sufficient to remove all doubt as to the historian’s meaning; “Inclining from the south, Æthiopia. the furthest habitable land, lies immediately conterminous [to Aromatic Arabia], on the west. It produces gold, elephants, and ebony; with men remarkable for their great size, beauty, and length of life. And these two countries [viz. Arabia and Æthiopia] are the furthest parts of Asia and Libya.”† From this it is evident that Asia and Libya, in the conception of Herodotus, were separated only by an ideal line. for the verb employed by him to express their connection (παραήκει), implies contiguity and continuation.

It would appear that Pliny, who was familiar with the double application of the name Arabia, seems to have understood this passage of Herodotus in the sense explained above; for after stating emphatically that cassia and cinnamon are the produce, not of the Arabian peninsula, but of the opposite African shores, or Troglodytica, he goes on to censure the historian for mixing fable with his account of the mode of collecting these productions, but not for any mistake as to their native home.‡ Eratosthenes also evidently considered the Troglodytic coasts as part of Arabia; and Strabo, after quoting that author’s description of them from the Straits to Aromata, concludes with these words—“such is his account of Arabia.”§

Eratosthenes, who was keeper of the library in Alexandria under Ptolemy Euergetes, is the earliest writer known to us who described in distinct and unambiguous terms the situation of the cinnamon country. According to him, it was situate 5000 stadia from the Straits of Deire (Bab el Mandeb), the coast running first southwards and then eastwards. Strabo, in copying this account, adds to it some particulars collected from other authors, and mentions Notu keras, South Cape or Horn (Cape Asseir perhaps or Gerdafûn), as the farthest known point on the shores of the Cinnamon country.|| The name South Cape originated in the belief, recorded by Herodotus, that the most southern point of the earth was in

* Itinerario di Ludovico de Varthema, Bolognese, &c. 1510, p. 14, a.

† Herod., iii. 114. So Strabo (ii. 7, p. 117) says, “On the other hand, we know that the cinnamon region is the furthest inhabited country to the south.”

‡ Pliny, Hist. Nat., xii. 41.

§ Strabo, xvi. 4, p. 769.

|| Strabo, xvi. 19, p. 778.

the Aromatiferous Arabia. But it is remarkable that the geographer passes heedless over the important fact that this remote region owed its name to its valuable productions. Of Arabia Felix he speaks in most glowing and exaggerated terms—borrowed indeed in a great measure from Agatharchides—and he describes it as a land of perfumes, yielding myrrh, frankincense, and cinnamon. He even asserts that the Sabæans used for fuel the fragrant wood of these precious trees. They carried on, he adds, a lucrative trade in spices and fragrant gums, the produce not only of their own country, but also, he it observed, of Ethiopia.

The romantic hues thus thrown over the picture of Arabia Felix were copied by Pliny, but with a remarkable change nevertheless in the distribution of the colours. If the Roman naturalist says less than Strabo of the luxuriance of that country, he dwells, on the other hand, with affected admiration on the blessedness of a people who breathe so much of the incense destined for the altars of the gods. He seems disposed to make up with this vague kind of beatitude the measure of felicity traditionally assigned to the Sabæans. He says that frankincense grows only in Arabia; but for this unaccountable mistake he atones by stating most distinctly and positively that cassia and cinnamon are not the produce of that country, but of Troglodytica, or, as we now call it, the land of the Sómálí.*

Nearly eighty years after Pliny we find Ptolemy also pointing out the situation of the Cinnamon country in Africa. It cannot be doubted that the distinguished geographer of Alexandria had ample opportunity of learning the routes of commerce in his age; but unfortunately he thought himself bound to incorporate with his other information the particulars furnished by Marinus Tyrius respecting the sources of the Nile; and to do this, it was necessary not only to abridge boldly that author's stated measures, but also to dilate enormously the interior country already known to traders; and thus the regions of Cinnamon and Myrrh. uniformly described by all other writers as adjoining the Troglodytic coast, are placed by him at the sources of the Nile and of the Astapus respectively. He vaguely sets "above the sources of the Nile" the region of Cinnamon, a production which was obtained on the Aromatiferous coast, no further south than Opone, or the modern Hafoon.†

Proceeding down with the series of historic testimonies, we arrive, about half a century later than Ptolemy, at the most

* Hist. Nat., xii, 41, 42.

† Cl. Ptolemæus, Geogr., IV. vii. 33.

satisfactory and decisive of our authorities,—the *Periplus of the Erythræan Sea*. This treatise, ascribed heretofore to the historian Arrian, and bearing his name, may, with more probability, be supposed to have been written about the beginning of the third century.* It is a merchant sailor's guide-book, describing in a plain, unaffected style the ports of the Red Sea, Eastern Africa, Arabia, Ceylon, and India, with the business done in each. The commercial details related in the *Periplus* are copious and precise; and its geographical statements present the simple results of experience unmixed with any theory. Now we learn from the *Periplus* that at the time when it was written, the African coast from Aualites to Opone—that is, from the Straits to Hafoon, supplied in great abundance spices, including cassia, of various denominations, with gums and incense of the best kind. At the same time myrrh and frankincense of inferior quality are enumerated among the exported productions of Arabia; and in speaking of Malabar and Ceylon, the author mentions the pepper and malabathrum of the former; the pearls, ivory, and tortoiseshell of the latter; but respecting cinnamon and cassia he is quite silent.†

It certainly is remarkable that the author of the *Periplus*, who specifies cassia as the production of Barbaria, as the Troglodytic coast was called in his time, should not, either in speaking of that country or in reviewing the trade of Arabia and India, once mention cinnamon. In order to explain the absence of this name from his list of aromatic productions, it will be expedient to examine that list closely, so as to ascertain fully the value of its statements, and for this purpose to hear the testimony of another class of witnesses, namely, the distinguished naturalists Theophrastus, Dioscorides, Pliny, and Galen.

The first of these, the worthy pupil of Aristotle, gives a clear account of the mode of gathering cinnamon: the branch was cut into five parts, each about a span long; the top with the tender shoots was the most valued, and the other portions bore a lower price, as they were lower on the tree. The cassia boughs, according to the same writer, were sewn up in hides, till the wood was consumed by worms; the bark, otherwise inseparable, being left untouched by these on account of its bitterness.

* Dodwell assigned the composition of the *Periplus* to the reign of Marcus Aurelius and Julius Verus; Saumaise and Dr. Vincent, to the reign of Claudius or of Nero. The late M. Letronne, whose judgment seldom erred, thought it not anterior to Sept. Severus and his son Caracalla, who reigned jointly from 193 to 210. See the *Journal des Savans*, 1825, p. 263.

† *Periplus Maris Erythræi*, in Hudson's *Geographi Minores*, vol. i.

These spices, he says, were produced in Arabia, in the country of the Sabæans, thus unconsciously extending the name of Arabia to the coasts of Africa colonized by these people, and ministering to their commerce.* But in this respect his followers were better informed: Dioscorides, Pliny, and Galen taken together (for the differences between them are of little importance), inform us that the best cinnamon was named by the natives Mosyllum, which was also the name of the locality where it was obtained. There were several varieties of cinnamon, all named from the localities producing them, and the yellow or mountain variety is particularly indicated; but our authors give none of these native names except Mosyllum.† With cassia it is otherwise, for they not only distinguish the several kinds, but also tell us their native names. The *ἄχου*, or, as the Alexandrian merchants called it, daphnitis, is praised by Dioscorides; but it appears to have given way in Galen's time to the rose-coloured kind called gizi; then came the Mosyllitic bud (*βλαστὸς Μοσυλίτης*), and then the cheaper kinds, kitto or moto, asyphe, and duaka.‡ This careful discrimination of varieties may be taken as proof of a regular trade of long standing.

The general purport and implied circumstances of these statements call for a few remarks. In the first place, it is evident that the authors just cited considered the various kinds of cinnamon and cassia as productions of one and the same country, of which the principal mart was Mosyllum. The geographical position of this place, 300 miles probably eastward of the modern Berberah, shall be discussed lower down. Secondly, though still in Pliny's time, cassia differed obviously from cinnamon, in being only a rind, and not a sprig comprising wood and rind; yet it is evident that in the age of Galen a change had taken place in this respect, and that cinnamon, like cassia, was brought to market in the double form of rind or bark, and bud or tender shoot.§ Thirdly, the distinction between these two spices was never founded on specific differences of a scientific character, or thoroughly ascertained. Though the earlier naturalists

* Theophrastus, *Hist. Plant.*, IX. v. 1.

† Galen de Theriacis, in Kuhn's edition, vol. xiv. p. 257; Dioscorides, lib. xiii.; Pliny, *Hist. Nat.* xii.

‡ Dioscorides, lib. xii. His Asypheumon is apparently the Asyphe of the Periplus; his kitto (in the Latin version motto) is the moto of the others; his dakar (in the Latin darca) is probably the duaka of the Periplus; his gizir is the gizi of Galen, the gizeir of the Periplus and perhaps also the zigeir of Dioscorides. As to the derivation of these words, gizi might be the local corruption of ketziyah, cassia; kitto might possibly be the Phœnician keddah; and duaka the Indian chwaka, bark or rind.

§ Pliny, *Hist. Nat.* xii.

seem to suppose that cinnamon and cassia were the productions of different trees or shrubs, growing in different situations, yet they evidently wrote without any certain knowledge of that fact. But Galen, with great experience and far more ample means of information, inclined to the opposite opinion: he shows, without intending it, that the faculty of discriminating these two spices was merely empirical. He insists earnestly on the certainty with which they may be distinguished, yet says so much on the opposite side, as to shake his reader's faith in his assertion. He tells us that the cassia and cinnamon plants are so nearly allied, that the former is capable of changing into the latter; that he himself saw sprigs of cinnamon on a cassia tree, and that gizi, or the best kind of cassia, is exactly like cinnamon; "for," he adds, "what is constantly sold as cinnamon by those versed in the business, must necessarily be of the same kind with it."* Fourthly, it is a significant circumstance that the different sorts of cassia were known by their proper native names; whereas cinnamon, dearer, and consequently in less demand, was spared, owing perhaps to the mercantile advantages of its name, those vulgar marks of variable quality.

Now, the author of the *Periplus*, in enumerating the aromatic productions of *Barbaria*, mentions, by their native names, every kind of cassia indicated by other writers—*Daphnitis* and *arebo* alone excepted, which, as Galen seems to intimate, had probably in that age gone out of use;† he names gizi, moto, duaka, and asyphe:‡ but besides these, and at the head of all, he mentions, as a separate article, cassia. What can this cassia be, then, but the cinnamon of other writers? Let it be remembered that the Phœnician name cinnamon was originally given to a foreign article, and contained a foreign element; the word *ketziáh*, or cassia, on the other hand, was purely Semitic. It is natural, therefore, to suppose, that while the former name remained in the channels of trade anciently plied by the Phœnicians, the use of the latter was co-extensive with the Semitic tongues, and that the Arabs shipped their spices under plain, significant, vernacular names, leaving it to the dealers and retailers of the north to select the best samples and call them cinnamon. The author of the *Periplus*, therefore, when he uses the word cassia instead of cinnamon, only changes the language of the Greek or Roman druggist for that

* Galen, vol. xiv. pp. 56, 63, 70, 73.

† *Ibid.*, p. 72. "The best is gizi, then moto; some name also *Daphnitis* (the *ἀλκυ* of *Dioscorides*) and *Arebo*."

‡ *Periplus*, Mar. Er. in Hudson, pp. 6–8. The author also names *mogla*, not elsewhere mentioned; *aroma*, probably an incense; and *makheir*, which can hardly have been mace, as some suppose.

of the Red-Sea merchant : and in support of this view of the case there remains another very cogent argument. We are told on all sides that the best cinnamon was procured at Mosyllum. Now, what does the Periplus say of the exports of Mosyllum? Here are the very words:—"From this neighbourhood is exported a great quantity of cassia, in consequence of which this emporium requires larger vessels." Surely this cassia must have included, at least, the cinnamon which was named from the place.

From the Periplus we also learn that part of the produce of these coasts was carried across to Ocelis (just within the Straits). or to Muza (near the modern Mokha) in Arabia, to be thence forwarded, doubtless by caravan, to the shores of the Mediterranean.* And respecting the town of Arabia Felix, on the southern coast of Arabia, we are informed that it was so called because, previous to the discovery of the monsoons, the whole trade between India and Egypt passed through it.† What is thus said of the sea-port may be justly applied to the whole country, which bore the same name. That sea-port was apparently the same place which Ptolemy named *Arabie Emporium*; and the author of the Periplus tells us that, a little before his time, it was destroyed by the Romans.‡ But it is to be presumed that the Romans followed up their victory by occupation; for the position assigned in the Periplus to Arabia Felix, together with the principle that it is nature which chiefly determines the site of a great maritime emporium, proves that the place in question was no other than Aden, which, in the fifth century, was the Roman emporium, or entrepôt, of the Indian trade.§

Furthermore, the Periplus not only discloses to us the important fact that Arabia Felix owed its fame and riches to foreign trade, showing, at the same time, whence some of the valuable productions entering into that trade were derived; it also allows us to perceive that the Arabs had established their sway on the African coasts at a very early period, not by force so much as by the influence of trade and the gradual colonization connected with it. Eastern Africa was subject, we are told, to Mopharites (an Arab prince), "according to some ancient right," and was visited by ships from Muza, manned by Arabs, who allied themselves by marriage with the natives.||

* Periplus, p. 6.

† Ibid., p. 15.

‡ Those who refer the composition of the Periplus to the first century, suppose the expedition of Ælius Gallus to be here referred to; but the Romans on that occasion did not reach the southern coast. The Arabian expedition under Severus took place in 198 or 199.

§ Philostorgius, Hist. Eccles. p. 28—τὸ Ῥωμαϊκὸν ἐμπόριον . . . καλοῦσι δὲ τὸ χαρίον Ἀδάνη.

|| Periplus, p. 10.

There still remain two authorities to be added to the list already cited in reference to the aromatiferous region of Eastern Africa. Philostorgius, after speaking of the Auxumitæ, goes on to say—"East of them, on the furthest part of the coast, are the Syrians, planted there by Alexander the Great; they are now (towards the middle of the fifth century) quite black, but still retain their original language. In their country especially grow *xylocassia*, *cassia cassamum*, and *cinnamon*: it abounds also in elephants."* Again, in the early part of the sixth century, the monk Cosmas visited Abyssinia and the coasts extending south-eastwards to Aromata; and he relates that the people on these coasts purchased from their neighbours in the interior frankincense, *cassia*, *calamus*, &c., which they sent by sea to Adulis.† He, like the author of the *Periplus*, says nothing of cinnamon; but this apparent omission may be explained, as in that case, by his residence on the shores of the Arabian Gulf, and his consequent adoption of the mercantile language there in use.

The ancient authors, who bear witness as to the country producing cinnamon and *cassia*, have been thus reviewed; and what conclusion can be drawn from their collective testimony, but that the spices in question were obtained from Barbaria, the Eastern portion of the Troglodytic coast, or, as it is now called, the *Sómálí* country? As far as the concurrent testimony of a long series of respectable writers, extending through ten centuries, can establish a fact, this fact is established. Yet it appears certain that the first knowledge of cinnamon came from another quarter. Homer, who, as a Greek, displays all the knowledge of his age, yet says nothing of cinnamon, the mention of which, nevertheless, occurs long previously in the Hebrew writings. The name given by the Persians to this spice, and borrowed from them by the Hindeos, Armenians, and even the Arabs, ascribes it to China:‡ and we may presume, from these and other similar indications, that cinnamon reached Judæa and Phœnicia in the first instance by the overland route through Persia. But the Sabæans, dwelling in Arabia Felix, and masters of the opposite African coasts, which teemed with aromatic productions, and who were always as much rivals as carriers of the Indian trade, brought to market a similar article, which in a certain form usurped the name of

* Philost., *Hist. Eccl.*, p. 30.

† Cosmas *Indicopleustes*; *Topographia Christiana*, in Montfaucon's *Collectio Patrum*, vol. ii, p. 139.

‡ Dazezenic (cinnamon, from the Persian *Darchini*) is mentioned by Moses Chorenensis (*Hist. Armen.*, p. 367, Whiston's edition), in the fifth century, and distinctly stated to be brought from China.

cinnamon, and probably quite supplanted the genuine Chinese spice. As the merchants of Sheba (the Sabæans) "occupied in the fairs with the chief of all spice,"* their country (Arabia Felix) was thought to be the only land that produced them.

But when the conquests of Alexander had shaken the old systems of Eastern politics and commerce, and the Greeks, under the Ptolemies, began to engage actively in the trade of the Red Sea, the mention of aromatic produce on the African coast grew continually more frequent and distinct, until at last, on the opening of a direct trade between Egypt and India, and Greek merchants exploring every coast, delusion vanished, and the whole truth came to light. The Sabæans lost, with their carrying trade, the chief source of their prosperity; whilst the opposite African shores, long bearing names of high promise, now justified their appellations by supplying the Roman world with cinnamon and cassia, together with a large variety of odoriferous gums and incense. It may be reasonably inferred, therefore, that so far back as the Sabæans had the reputation of dealing in spices they drew their supplies from the same shores; and the monk Cosmas manifests shrewdness as well as his practical acquaintance with these countries, when, in speaking of the presents made to Solomon by the Queen of Sheba, he asserts that she obtained the spices from *Barbaria*.†

After the discovery of the monsoons, the Sabæans, owing to the inferiority of their ships and the power of their rivals, became totally excluded from the Indian trade, and for some centuries were reduced to a state of mercantile dependence and inactivity.‡ But in the meantime the Roman empire declined. The Persians under the Sassanides, and particularly under Chosroes I., succeeded in engrossing the commerce of the East; and the foundation of Bassorah by the second Khalif confirmed this revolution. All the trade of India now flowed through the Persian Gulf, and the Red Sea was deserted. Thus the downfall, and, it may be, the extinction of the African spice trade, probably dates from the close of the sixth century. Malabar succeeded at once to this branch of commerce, and as the Sabæans, in the height of their fortune, had converted to their use the resources of Africa, so the Indians increased their gains by purchasing, at a cheap rate, the cinnamon trees borne down by the torrents from the forests of Ceylon.§ The

* Ezekiel xxvii. 23.

† Topogr. Christ., p. 139.

‡ Gildemeister, *Loci Araborum de Rebus Indicis*, p. 34.

§ This was called *Dachini Zeilani* (Cinghalese cinnamon), which Teixeira (*Relaciones, &c.*) interprets "wood imported by the Chinese from Ceylon." This is worthy of the writer who says that the *Chingalas* (Cinghalese) were so called, because they are a mixture of Chinese and Galas! Yet Karl Ritter follows him.

superiority of this tree over the kindred species in Malabar could not, perhaps, under the circumstances of its discovery, be recognised at first; but when, in the beginning of the sixteenth century, the Portuguese first arrived at Ceylon, it was fully understood, and cinnamon was collected in the forests every third year—not without difficulty, however, owing to the turbulent habits of the people;* and it was to obviate this difficulty that the Dutch, in 1770, planted the aromatic laurel in their portion of the island; so that the cultivation of cinnamon in Ceylon is not yet a century old.

It must not be dissembled that the conclusions contended for in the preceding pages are at variance with the opinions on the same subject hitherto maintained by eminent scholars. But these opinions will be found, on examination, to rest on very loose reasoning, the inconclusiveness of which is barely concealed by prolix erudition; and after what has been said it is hardly necessary to discuss them. Yet there is one author, nearly of our own time, to whose reputation it is due that his opposition should not be passed by unheeded, but that he should be directly met and fairly confuted. Dr. Vincent, the author of 'The Commerce and Navigation of the Ancients,' gives it distinctly as his opinion that the Ancients had *true* cinnamon, by which expression he means Cinghalese cinnamon, but that they called it cassia, their cinnamon being a different thing.† If so, it follows that their cinnamon far surpassed that of Ceylon. He supposes that the Cinghalese spice was carried to Mosyllum and there sold as native produce to the Greek merchants, who were kept in the dark as to its origin. It is hard to deal seriously with so extravagant and unnatural a hypothesis. Why should the Indian merchants, instead of carrying their precious commodities to the chief marts of the Persian and Arabian gulfs, resort with them to a barbarous coast, and prefer selling them as African productions? But Dr. Vincent thinks his case proved by the words of Pliny:—"Portus Mosylliticus, quo cinnamomum devehitur:" "The Mosyllitic port to which the cinnamon is carried down."‡ It is obvious, however, that the word *devehitur* does not necessarily mean carried by sea.§ We know, from several ancient writers, that the aromatic produce exported from these coasts was carried down to them from the interior; and such undoubtedly was the meaning of Pliny, who

* Itinerario de Varthema, p. 27.

† Commerce and Navigation of the Ancients, vol. ii. p. 702.

‡ Hist. Nat., vi. 34.

§ The verb *deveho* does not in this place differ in meaning from *defero*, which Pliny uses in the same paragraph in reference to goods brought down from the hills to the coast; 'deferunt plurimum ebur, rhinocerotum cornua,' &c.

very distinctly assigns cinnamon not to Ceylon, but to the country immediately in the rear of the Troglodytic coast, or, to use his own word, "cinnamomum nascitur in Æthiopia Troglodytis connubio permixta:" "Cinnamon grows in that part of Ethiopia which is connected with the Troglodytic coast by intermarriage."*

According to Dr. Vincent the cinnamon of Ceylon was carried by the Indian traders to Mosyllum alone, whereas the Periplus informs us that there was no port, but an open roadsted at that place, which could hardly, therefore, have been selected as an emporium by foreigners. The same treatise, though it says nothing of Indian traders at Mosyllum, tells us that ships from Barygaza and Ariake (Baroach and Concan) frequented the ports *beyond* (τὰ πέραν ἐμπορίαν), that is, on the eastern coast down to Opone or Hafoon, bringing cargoes not of fine spices, but of provisions and clothing adapted to the wants of a rude people, with "some of the cane-honey called sacchari (sugar)," by way of luxury.† But with respect to the cassia of Mosyllum, the Periplus asserts that it was the produce of the country;‡ while Galen tells us that the best cinnamon was called Mosyllum by the natives of the country producing it.§ And, again, at Acannæ and Opone, cassia is mentioned in the Periplus as the growth of the country.|| But such was the reluctance of Dr. Vincent to find the cinnamon of the ancients on the African coast, that he tampered with his evidence rather than admit the point; and when Galen relates that the Emperor Marcus Aurelius received a cinnamon plant from Barbaria, the Doctor converts this expression into Barbariké, and, on the authority of the Periplus, he places the country so named near the Indus; forgetting the absurdity of deriving from the Persian gulf what he has elsewhere taught us to believe was to be found only in Ceylon ¶

The earliest mention of the cinnamon of Ceylon, according to Dr. Vincent, occurs in the notes of the scholiast on Dionysius Periegetes. But those who will examine the question with minds not so biassed as to be ready to wrest to their purpose

* Hist. Nat., xii. 44.

† Periplus, p. 9.

‡ The words are ἐξάγεται δὲ ἀπὸ τῶν τόπων,—“there is exported from these parts.” In speaking of the exports of Barygaza, the author employs the same expression, obviously in reference to the productions of the country.

§ He says plainly that it was so named by the natives, ἀπὸ τῶν ἐγχωρίων.

|| The expressions used are γίγνεται and γεννᾶται, p. 8.

¶ Dr. Vincent's research was very slovenly; he knew Galen only from Ramusio and Saumaise, and perhaps he knew the latter only at second hand. Saumaise uses the expression “ex barbarica regione,” but a few lines lower down he quotes the original words ἐκ τῆς βαρβάρου, which he translates correctly “ex Barbaria.” Compare The Commerce, &c. of the Ancients, vol. ii. p. 706; Galen, tom. xiv. p. 70; and Salmasius, Exercitationes Plinianæ, p. 90.

every obscure phrase, will not find the slightest trace of such an allusion in the scholia referred to.* The last distinct notice remaining to us of the cinnamon trade of Eastern Africa is in the work of Cosmas (in the early half of the sixth century), who, with much information respecting Ceylon, yet says nothing of its cinnamon. Moreover the Arabs, habitually attentive to matters of trade, are silent respecting cinnamon in their descriptions of that island, though they extol its ivory, pearls, and, above all, its rubies. The Narratives of the Arab Travellers to China in the ninth century point out the productions of Ceylon, and yet do not mention cinnamon.† Edrisi (1153) is similarly silent, though he notes a spice of this kind produced in Malabar.‡ The expression “*dārchíní*,” or “*dārzíní Zeilání*,” *i.e.* cinnamon of Ceylon, occurs indeed in Arab writers, though not at an early age. But it is justly remarked by Nees von Esenbeck that the name in question is evidently that of a new or foreign article and implies the previous existence in commerce of another ‘*dārchíní*,’ or cinnamon.§ The first descriptive account which we have of the Cinghalese trade in this production is given by Ibn Batútah (in the middle of the 14th century), and presents a lively picture of a traffic carried on with a rude people possessing neither industry nor commercial habits. He relates how the ship in which he sailed being driven to the coast of Ceylon by stress of weather, he saved it from pillage by a stratagem, pretending to be a relative of the King of Maabar. He goes on to say, “The whole coast is covered with trunks of the cinnamon tree, which are borne down from the mountains by the torrents, and lie in heaps on the shore till the people of Maabar and Malabar come to load their ships with them, which they can do at little charge, since for a small present of cloth to the King alone they may carry off whatever they please.”|| This passage, written in the 14th century, completely negatives the hypothesis of an ancient trade in Cinghalese cinnamon; and it is manifest, moreover, that no fine spice could have been procured by the traffic here described.

If from the Arabs we turn to European travellers of the

* Dion. Perieg., v. 944.

† Relations des Voyages faits par les Arabes dans l’Inde, &c., par M. Reinaud, Paris, 1845, tom. i. pp. 5, 6, 126.

‡ Géographie d’Edrisi, &c., traduite par M. Jaubert, Paris, 1836, tom. i. p. 71.

§ Nees von Esenbeck, Disputatio de Cinnamomo, in the *Amenitates Botanicæ* Bonnenses, 1823, p. 13.

|| From the De Gayangos MS. of Ibn Batútah’s complete narrative. In the Transactions of the Royal Asiatic Society, vol. 1., is a paper by Sir Alexander Johnston, relating the tradition that the Arabs had settled in Ceylon in the eighth century, and exported cinnamon among other things; but no authority can be attached to such vague statements.

Middle Ages, as Marco Polo* (1290), Jordan de Severac† (1330), and Juan de Hese‡ (1389), we find them all concurring with the former in reckoning cinnamon among the chief productions of Malabar; while they represent Ceylon as rich in pearls and rubies, but barbarous and without industry. The last-named writer says even that its inhabitants are anthropophagi; while in Malabar are produced pepper, “et canellæ quæ grossæ appellantur;” that is, the *canella grossa* of the Italians which would be now called cassia. It seems probable indeed that the cinnamon, or canella of the middle ages, was generally an article of very inferior quality. Marino Sanuto, who wrote in the middle of the 14th century, does not reckon it among the more valuable spices. He says—“From the side of the Tartars, that is, from Bagdad and Tabriz, are, at the present day, brought from a great distance to the Mediterranean Sea almost all the articles of merchandise of moderate weight and great price or value—as cubebs, cloves, nutmeg, mace, and such like things: but other articles of greater weight and less price—as pepper, ginger, frankincense, canella, and the like, come to Alexandria by way of Aden in greater quantity than by the route abovementioned; but of these heavier goods, whatever comes by way of Chaldæa and Persia is of far superior quality.”§

In attempting to institute a comparison between the ancient cinnamon and the modern, it is necessary to bear constantly in mind that the epithets true and genuine, applied to this spice in the absence of any well-determined natural characters, and of an absolute, invariable standard of sensible quality, are altogether delusive. It is manifest that the same name may have been, and, in fact, has been given, in different ages to very different productions. And, on the other hand, even at the present day, the cassia-bud of commerce is taken from the same tree which yields the best cinnamon.¶ The want of a broad and well-founded distinction between cinnamon and cassia, and the consequent adulteration of the former, are repeatedly complained of by ancient writers. The quality of the spice, which was formerly the chief test of its genuineness, necessarily depends on treatment. The ancients preferred the succulent tops of the boughs; so that their best cinnamon resembled in this respect the best khát (*Celastrus edulis*) of

* Voyages de Marco Polo, publiés par la Société de Géographie, Paris, 1824, pp. 197, 448, 221, 166.

† Mirabilia descripta per Fratrem Jordanum (in the Recueil des Voyages, &c., publié par la Société de Géographie de Paris, tom. iv. 1839), pp. 49, 51.

‡ Itinerarius 19 b.

§ ‘Liber Secretorum Fidelium,’ in the ‘Gesta Dei per Francos,’ tom. ii. p. 23.

¶ Nees von Esenbeck, Systema Laurinarum, p. 66.

the Arabs at the present day;* but the tender shoots, though exquisite while fresh, soon deteriorate. Yet in those days a better choice could not have been made; for the work of divesting the boughs of a certain age and size of the rough external bark, and of then peeling off the thin and fragrant internal bark, as is now practised in Ceylon, requires more attention and systematic industry than belonged to the Troglodytes. The practice of these people appears to have been to cut the whole tree to pieces; the boughs were divided into five portions, declining in value from the top downwards; then came probably pseudo-cinnamon and xylocinnamomum (false and woody cinnamon); of cassia and cinnamon together they brought to market ten or twelve denominations, passing imperceptibly one into the other.† Our cinnamon, on the other hand, is remarkably uniform, being generally peeled from the straight suckers of trees lopped for this purpose. Without attention to these particulars, it is evident that no fair comparison can be made between the kindred spices of Africa and Ceylon.

If we assent to the remark of Cosmas respecting the source whence the Queen of Sheba obtained her spices, then the passage in the Book of Chronicles, recording her presents to Solomon, will enable us to trace back the Sabæan trade in the aromatic produce of Eastern Africa a thousand years before the commencement of the Christian era. This trade had in ancient times an importance hardly conceivable at the present day. It supplied the precious materials essential to all religious festivals and funeral rites. Every display of piety was attended with an expenditure of spices, perfumes, and incense. From the altar and the pile thick clouds arose, which, as the multitude gazed on their mysterious forms, diffused around delicious odours. While man was still rude, no popular means of impressing the imagination and conciliating the feelings could have been devised more elevated and refined than the burning of incense. Pliny assures us that the quantity of incense consumed in his time was incalculable.‡ The cinnamon burnt at one funeral alone—that of Poppæa, Nero's second wife—was said to have exceeded the ordinary produce of a year. Herodotus informs us that the Egyptian embalmers filled the cavities of the corpses with myrrh and cassia.§ This usage was assuredly ancient in his days, and it supposes a commercial intercourse with the countries yielding

* Botta, Relation d'un Voyage dans l'Yemen, 1841, p. 98.

† Galen (de Simplicibus), vol. xii. p. 26; (de Theriacis) vol. xiv. pp. 63, 236, &c.

‡ Hist. Nat. vii. 41.

§ Herod. ii. 80. Was it not from the use of these *amoma* or spices that the embalmed body came to be called *amomia*, *monia*, and *mummy*?

those commodities of at least equal antiquity. The Egyptians related that Sesostris led his army southwards to the aromatic coasts; and, however we may doubt the fact alleged, it is evident that such a tradition implies a very ancient acquaintance and relations with the coast in question.*

But in this case we are fortunately not wholly dependent on remote inference or probable conjecture. We have evidence of an express and indubitable kind relative to the ancient Egyptian trade in aromatics, and determining at a known date the people engaged in it. The Rev. Dr. Edward Hincks, one of the most successful labourers in the field of Egyptian, Babylonian, and Assyrian archæology, and whose rare sagacity is happily combined with a sound method and scientific exactness, has translated some fragments of Papyri—autograph letters, written by a prime minister of Menephthah II., 3000 years ago—and containing instructions respecting the laying out of the table of the Sun; whence it would appear that this custom, ascribed to the Æthiopians by Herodotus, was still in existence at Thebes six centuries before the historian's age.† One of these letters “implies,” to use Dr. Hincks's words, “that there were Egyptian merchants trading to the various countries named, and who had store of their produce.” One of the countries mentioned is Arus (A! Ro, Su), and among its productions are to be distinguished frankincense and balsam.‡ Now, if it be asked where this country was situate, the natural and obvious answer is, that it was on the Troglodytic coast, adjoining the frankincense region, within which now dwell the Aroosi, a powerful tribe of Galla, who may be presumed to have ruled the plains in ancient times, while the mixed population of the coast was as yet comparatively weak.

But it is easy to foresee that this explanation, however natural and complete, is yet too novel to meet with immediate acquiescence. It will probably be urged that the Aroosi are a tribe of Galla, a race not known in history till the 15th

* Strabo (xvi. iv. p. 769) sets the pillar of Sesostris with hieroglyphic inscription at Deire or the Straits. Pliny (Hist. Nat. vi. xxix. 34) leads the conqueror to the promontory of Mosllyum, by which he means the Eastern termination of the land, the Aromata of others, and our Cape Gerdaſin.

† Transactions of the British Archæological Association; Winchester Congress, 1845; p. 246, &c.

‡ Transactions, &c., p. 262. The way in which this word is to be read—the names of the letters being here given, instead of the letters themselves—is explained by Dr. Hincks in p. 254. It must be observed that Dr. Hincks supposes the Arus of the papyrus to have been the Arsæ, an Arab tribe, placed by Ptolemy in the vicinity of Yambo, and not mentioned by any other writer. But the pretensions of the Arsæ in this case are founded merely on their name; the spice trade, so long as it passed through Arabia, was strictly monopolized by certain well-known tribes.

century of our era ; that the country occupied by them is at a distance from the sea-shore and the aromatiferous districts ; and lastly, that the period of 3000 years, which has elapsed since the date of the papyrus above referred to, admits of so much revolution, extinction of race and change of language, that we are not justified in inferring from mere resemblance of names, the permanence of a comparatively obscure tribe, for such a length of time.

These objections are not without weight, and deserve consideration. But, with respect to the recent appearance of the Galla in the field of history, this does not disprove, any more than it elucidates, their previous existence.* No importance can be attached to the silence of the Abyssinian annals. Whatever may have been the circumstances which led to the combination of the Galla tribes and their invasion of Abyssinia, where they figured on a new scene and under a new name, they were undoubtedly numerous at the moment when they rose into notice, and, in race, as ancient as their neighbours. They extend at present through thirteen degrees of latitude, and yet their multiplication cannot be reasonably ascribed to their Abyssinian conquests ; while their language, allied to the Dankali and Somáli tongues, proves their original connection with the Troglodytic race. The Aroosi are reckoned among the most powerful tribes of this nation — or perhaps they are rather a family of tribes—and occupy the banks of the Webbi (O-ebbi, the river), where, descending in an easterly course and receiving from the N. the Zorâte and other streams, it enters the country called by the Abyssinian and Portuguese writers Doáro, contiguous to Harar and the maritime Somáli.†

The country in question has probably experienced, from the time of the Pharaohs to the present day, many vicissitudes of fortune and sweeping revolutions. Of these a few are known to history ; others may be easily conjectured. The Arabs, who settled at an early age on the African coasts, doubtless assumed the dominion to which their superior industry and civilization entitled them. They held jealous possession of

* The first appearance of the Gallas in Abyssinia is usually assigned to the reign of Melek Segued (1563). See Bruce's *Travels*, 8vo., vol. iii. p. 236. But they are mentioned in the *Abyssinian Annals* nearly a century earlier. Ruppell, *Reise in Abyssinien*, vol. ii. p. 337.

† *Journals* of Messrs. Krapf and Isenberg (*Missionaries in Abyssinia*, p. 179). In the map accompanying Rochet d'Hericourt's *Voyage dans le Royaume de Choa*, the Aroosi are said to be the same as the Itou (Edoor ?) Galla, who are divided into twelve tribes. It is remarkable that Captain Smee heard of them on the east coast, as occupying the banks of the Webbi. They seem to be the possessors of the country called in the *Abyssinian annals* Arate, or, as Bruce renders it (vol. iii. p. 87), the land of the Oriti, near which flows the river Zorâte.

the coasts, and, as they increased, compelled the aboriginal tribes to retire to the interior. This continual growth of a maritime population, distinguished by admixture of foreign blood from the indigenous inhabitants of the country, must alone have been a fertile source of revolution. After a time, the prosperity of the Sabæans, on which that of their settlements depended, received a fatal shock from Roman conquest; their carrying trade was taken from them by the Greeks, who lost it in turn when the channel of commerce shifted from the Red Sea to the Persian Gulf. At the same time Paganism declined, and many of the rites and usages which had created such a demand for the odoriferous gums became thereby extinct. Then followed the prolonged contests between the Christians of Abyssinia and the Mohammedans of the adjoining maritime region; and at last, in the 16th century, the Portuguese, having opened a new route to the East Indies, carried their arms into the Red Sea, and totally destroyed Zeilâ, at that time a flourishing place.

Any of these events might have been sufficient to set in motion or to scatter the half-civilized population of the coasts, but on the extensive plains and hills of the interior we may be assured that the indigenous tribes felt little of their effects. In the Adulitic inscription, which records the victories of a King of Axum, and was written probably about A.D. 325, it is stated that he (the king) had subdued "the tribes of the Rausi, who dwell in the interior, adjoining the frankincense country, occupying immense waterless plains; and also the tribe of Solate; and that he had appointed them (viz. the Rausi and Solate) to take charge of the sea-coasts."* Who then were these Rausi? Were they not manifestly the Aroosi, now retired to the borders of the Webbi, and not far from the river Zorâte, on the banks of which probably dwelt the Solate of the inscription? It is obviously more natural to assume that the Rausi of the 4th century were the ancestors of the Aroosi of the present day, than to suppose two nations of similar names, occupying in succession the same region, yet totally distinct from each other. Thus we can trace the Aroosi back through fifteen centuries, and find them occupying the plains between the hills which they now possess and the maritime country. Their turbulence probably disturbed the trade, and thus provoked the arms of the King of Axum; who, accepting the tokens of their homage, and affecting to engage them in his service, left them, we may be assured, just where he found them.

* Cosmas Indicopleustes, &c.

But if we can trace back the Aroosi through fifteen centuries, during which a number of remarkable events—the decline of the ancient Egyptian civilization, the extinction of paganism round the shores of the Mediterranean, the discovery of the direct passage from Egypt to India by the aid of the monsoons, and the rise of Mohammedism, with its attendant wars—communicated so many revolutionary impulses to these coasts; and if we are justified in assuming that in early ages, anterior to the influence of so many foreign and fluctuating interests, the affairs of the Troglodytes enjoyed greater stability, why should we be surprised at finding the Aroosi figuring as dealers in the productions of their country in the time of Menephthah II., or fifteen centuries anterior to the Adulitic inscription? And this early intercourse between their country and Egypt accounts for the expedition of Sesostris to the mouth of the Red Sea, just as their trade with Adulis explains the triumphant inscription of the King of Axum.

Thus we are enabled to trace back the trade of the Eastern angle of Africa at least 3000 years. The cassia, cinnamon, myrrh, and other aromatics used in embalming the dead in Egypt, were drawn from that region, on the several portions of which the Greeks and Romans, at a much later period, bestowed the epithets of *Aromata*, *Aromatifera*, *Myrrhifera*, *Thurifera*, and *Cinnamomifera*. There is no other example in ancient or modern geography of a country denominated so entirely from its productions, and that the character so emphatically given to that country by the ancients should have been so wholly lost sight of in modern times, can be explained only by the dependence of fame on fortune; and by the dogmatism of scholars, who have too often forced their own meaning on the authors whom they pretended to expound. The obscurity which involves at the present day the "*Regio Cinnamomifera*"—a region pointed out distinctly by so many of the chief authors of antiquity, is very remarkable, whether it be considered from the literary or from the commercial point of view.*

The accounts given of the coast from Deire or Bâb-el-Mandeb to Opone or Hafún, by various ancient writers, from Strabo (copying Eratosthenes and Artemidorus) to Cosmas inclusive, unite to form a very distinct and intelligible picture

* Let it be remembered that Bruce (vol. vii. p. 329) states that Cinnamon still grows near Cape Gerdafûn. He says, "This second sort (which grows on the plain) is very nearly equal to that of Ceylon, if not absolutely so." And again, "I have seen and compared both sorts from both places (Ceylon and Gerdafûn)." He suggests that the cinnamon of Ceylon was originally carried thither from the *Promontorium Aromaticum*. Mr. Angelo, who has recently visited the coast in question, reckons cassia among its productions.

of the country and its commerce. The first named of these writers gives in general only the Greek names of the places resorted to, but it is probable that these occupied nearly the same sites as the places afterwards known by native names. The towns along the coast were entitled Tapara, a name in which it is easy to recognise the *debra* (hill or eminence) of the Abyssinians), and which still remains little altered to the hills of Dhubarah.* The best myrrh was procured at Avalites, not far from the Straits. and probably in the vicinity of the modern Zeila. Eight hundred stadia (80 nautical miles) further; at the bottom of the Aualitic bay, stood Malao, a place of more importance, but exposed to the weather except on the E., where a point of land afforded shelter;† this was probably the Pytholaos' station of earlier times, and nearly where Berberah now stands. Berberah has indeed a small sheltered haven; but we must not expect to find a sea coast wholly unchanged after the lapse of 16 centuries. Besides myrrh, Malao furnished peratic frankincense, cassia of inferior quality, duaka, cancamus, and makheir, with a few slaves; these last indicate the vicinity of the Abyssinian hills, and strengthen the presumption that Malao stood on or near the site of Berberah. As to the other commodities, they were all, the myrrh excepted, brought from a distance, and merely stored here. Hence the cassia or cinnamon was of an inferior kind, because freshness being essential to the excellence of this spice, the best kinds were shipped at once from the places producing them. The frankincense was called peratic, or from *beyond* (πέραν), because it was brought from the eastern coast; for Barbaria, or the Somali country, was popularly considered in those days as a mere tongue of land dividing the two seas; and, with reference to the northern coast, the other was called peratic, or yonder.

Two days from Malao towards the E. stood Mundū, where an island at a little distance from the shore sheltered the anchorage. This island may be now found at Kurrum, or still more probably at Meyet (Burnt Island). From these places were exported the commodities already named, besides a kind of incense called moerotū. Along this tract the coast was a desert; but there were said to be numerous towns in the interior, and also two rivers, the Isis (perhaps the Hawash) and the Nile, by which may have been meant the Webbi:‡ and if so, we have

* Periplus Mar. Erythr., p. 5. Debra is written Däbrä by M. D'Abbadie (Bulletin de la Soc. de Géogr., 1842, p. 192). In Arabia we find Tapharon (Philostorgius), Saphara (Ptolemy), Dhofar and Tsfar (Fiesuel, Journal Asiatique, 1845, p. 221). Dr. Vincent, in his edition of the Periplus, changes τάραρα into τάρερα, a barbarism which he supposes to be equivalent to τὰ πέραν ἐμπορία, an expression of frequent occurrence in the Periplus, but the meaning of which he did not understand.

† Periplus, p. 6. Ptol. iv. vii. 10.

‡ Strabo, xvi. iv, p. 771.

here the earliest allusion to the river which, under the name of the Nile of Makadosho, was supposed by Arab writers, at a later period, to be connected with the Nile of Egypt.

Beyond this place the scene changes, the desert disappears, and from Mundu on to the cinnamon region, which commenced at a river overgrown with reeds, the coast was intersected by numerous streams and watercourses, while the frankincense-tree adorned all the valleys.* The coast thus described was obviously the tract at the foot of the limestone range of mountains called Jibel Wúr Singali, and the boundary of the cinnamon region was probably the river marked in the charts at Bunder Khor. It was somewhere on this part of the coast, from the termination of the mountains to the boundary river, that Mosyllum stood,—that is to say, between Bunder Ghasim and Bunder Khor.† It had no port, but an exposed anchorage, so that it must evidently have owed its existence and commercial importance to some decided advantages of position with respect to the passes up the country to the most productive districts. It could have been visited by ships only at a certain season, perhaps at the close of the cinnamon harvest, when the fresh spice was shipped at once and carried off.

And now another manifest change takes place, and within the limits of the cinnamon region the coast appears to be more populous and better watered ‡ It is probable that this was the tract with which the Greeks were best acquainted; and indeed the general correctness of their descriptions is sufficiently borne out by our charts. It was a voyage of two days from Mosyllum to Mons Elephas, passing Nilotolemæus (perhaps on the boundary river, or Bunder Khor), Tapatege, Little Daphnōn (Muriyah) and Apollo's Water-course (Khor Filúk), where myrrh, frankincense, and cinnamon were produced, though the last was more abundant in the interior.§ By Mons Elephas we must understand, not the Ras Filúk of the charts, but rather the collective headland of which Ras Ulúlah is the most prominent point. Indeed, Ptolemy and others give that name not to a point, but to the whole chain of mountains with which they furnished the interior of this region. Proceeding from Mons Elephas we find the great port called

* On this coast Strabo places *Λέοντος κόπη*, which Gwskurd changes into *Λέοντος σκοπή*, Leon's Look-out. If this be the true reading, then the genius of Ptolemy must have slumbered, for his *κοβή*, though shifted a little to the east, is evidently the *κόπη* of Strabo.

† According to the Periplus, Mosyllum was two or three days' sail from Mundu and two days from Mons Elephas.

‡ Strabo, xvi. iv. p. 774.

§ The second and third of these names are from the Periplus; the rest from Strabo, who calls little Daphnōn, *Daphnus*. These last appellations show the lively attention of the Greeks to the object of their search, an aromatiferous laurel.

Psygmōs (refrigeration or exsiccation):—a name which seems to denote the evaporation of a large sheet of water, such as might be supposed to take place in the Gulwaini (Great Lake);—and then the Great Daphnōn or Acannæ (near Moyah Buah) which produced the best peratic frankincense.*

The coast now turned southwards, and the *Aromatum Emporium* presented itself near the promontory called *Aromata*, the Notū-keras, or South Horn, of early writers; but which is said, in the Periplus, to be the most easterly point of the mainland. The emporium was open to the N., and therefore, whenever the sea looked tempestuous, the ships ran for shelter to the great headland called Tabæ, where cinnamon, several kinds of casia, including the best, and fragrant gums, all the produce of the country, were obtained † From this place a voyage of 400 stadia (40 miles) reached Opone (Hafún), where, besides the merchandise already mentioned, were procured also tortoiseshell, and slaves of the best description. These last were evidently Abyssinians, led down to this most distant port because the route to it across the desert lay through the territory of the slave-hunting Bedwin. The coast from Opone southwards, as described in the Periplus, corresponds for some days' voyage so perfectly with the charts, that there is no difficulty in recognising the several tracts therein indicated. But owing to the indeterminate manner in which the ancients employed the names Mons Elephas and Aromata, which certainly as often meant tracts as points of land, the sites of the stations between the former of these and Opone are less certain. If we suppose Aromata to be the Cape Gerdafún of our maps, then Tabæ must have been at Shenareef, and the distance thence to Opone is erroneously stated. But if Shenareef (the Gerdafún of the natives) be assumed as Aromata, or the Promontorium Aromatum, then the site of the emporium will be at Khor Abdahan, the hill of Tabæ will be at Ras Ally Besh-quail, and the town perhaps at Bannah (the Panōn Come of Ptolemy): the distances will be correct, and the descriptions more natural.

With respect to the ancient inhabitants of Barbaria, they were divided into two nations, the Avalitæ and the Mosylli, vaguely corresponding to the modern Edúr and Darúd ‡ A principal tribe of the Edúr still bears the name of Aber Awal, which recalls to mind the ancient name of the Avalitæ. The word Aber (meaning benú, or sons), may be taken as a proof of Hamyaritic or even of Syrian origin: *ber* in the one language,

* Periplus, p. 7.

† Periplus, p. 8.

‡ Ptolemy, iv. vii. 27. Marcianus Heracleota, in Hudson's Geogr. Min., i. p. 11.

bar in the other, signifying son. But among the eastern tribes, or Darúd, we find the Wúr Singali, or Ahl (nation) úr Singali, whose name suggests an affinity with the race of the Bojah (now called Bisharín), the original tenants of the plains to the N. of Abyssinia: for the word *úr*, or with the article *wúr*, signifying son, belongs to the language of Suakim.* Here, therefore, we have a minute but unquestionable trace of descent from the ancient Troglodytes, and this, as might have been expected, among the mountaineers.

* As to the position of the cinnamon country of the ancients, we have seen that it extended on the coast from the eastern termination of the Singali mountains to Hafún. But the chief supplies of cinnamon were derived from the interior: and taking into consideration the habits of the cinnamon-laurel in Ceylon and Malabar, we may safely conclude that in its African domain also its favourite seat is on the southern slope of the hills (here running W.N.W. and E S E.) facing the humid S.W. monsoons and probably standing on a siliceous rock succeeding to the limestone.

There was undoubtedly a time when the merchants of Egypt, Greece, and Rome used to meet those of India in the port of Hafún, and when the famed perfumes of Arabia seemed all transferred to the shores of Africa. Again, this lucrative commerce perished completely, so that even the fact of its existence has been deemed apocryphal. But as a country possessing such natural resources may easily emerge from poverty, perhaps in the cycle of revolution the prosperity of the Aromatiferous Region may again come round. Egypt again advances in civilization, a new traffic enlivens the Red Sea, and Aden is once more an emporium under the dominion of a great empire—greater than that of Rome—and destined to become still greater by the spread of civilization. We venture to hope, therefore, that British enterprise may explore the shores opposite to Aden: so that the eastern angle of Africa, stimulated and enlightened by such an intercourse, may yet become a cultivated garden of those sweets for the growth of which nature seems to have peculiarly designed it.

* Seetzen, Linguistischer Nachlass, p. 267.

XVII.—*Comparative View of the various Standards commonly used to express Vertical Distances.* By Miss COLTHURST.
Communicated by G. Bellas Greenough, Esq.

[Read Nov. 26, 1849.]

THE object of the accompanying table is to supply geographical students with a standard by which they may compare the notations of vertical distances contained in foreign works.

At present the barometrical observations of learned foreigners are frequently expressed in French mètres, in pieds du Rhin, in pieds de Berlin, in Paris feet, palmos, varas, &c. &c., rendering it necessary to enter into long calculations before comparative results can be obtained.

It is hoped that the present table will obviate this difficulty.

The standard selected has been the geographical mile taken at the equator, this being a fixed quantity universally known and dependent upon the figure of the earth itself. By taking 5 of these miles and dividing each into 100 parts or degrees, a scale is formed consisting of 500 degrees, each of which is equal to $60\frac{1}{2}$ English feet.

By this arrangement the student of every nation will find no difficulty in at once referring unfamiliar measures not only to one philosophical term, but to the standard to which he is himself best accustomed. If, for instance, it be stated that an observed elevation is equal to 11,956 pieds de Berlin, a glance at the scale will show that this is equal to 200 degrees, or 2 geographical miles; and carrying the eye along the line, a ready comparison may be instituted with any other standard measure desired.

The author is indebted to a paper by M. de Jomard* for the first suggestion of the utility of such a scale, and should the annexed table meet with a favourable notice among geographers, it is in contemplation to publish a work embodying the principal observed elevations upon the surface of the globe, and referring each to its corresponding value upon the geographical scale.

* Bulletin de la Société de Géographie. Deuxième Série, tom. iii.

Comparative View
of the various Standards commonly used by Geographers to express vertical Distances.

5 Geographical Miles at the Equator	French Feet (Metre)	5 Geol. Miles at the Equator	French Feet (Pieds du Roi)	5 Geol. Miles at the Equator	English Feet	5 Geol. Miles at the Equator	Bavarian Feet	5 Geol. Miles at the Equator	Danish Feet	5 Geol. Miles at the Equator	Swedish Feet	5 Geol. Miles at the Equator	Spanish Feet	5 Geol. Miles at the Equator	Italian Feet (Pieds du Rhin)	5 Geol. Miles at the Equator	Austrian Feet (Wiener Fasse)	5 Geol. Miles at the Equator	Portuguese Palmes	5 Geol. Miles at the Equator	Roman Palmes	5 Geol. Miles at the Equator	Prussian Feet (Berlin Fasse)
500	97,000	500	96,000	500	260,000	500	210,000	500	210,000	500	210,000	500	210,000	500	210,000	500	210,000	500	210,000	500	41	500	49,000
1	98	1	97	1	260	1	210	1	210	1	210	1	210	1	210	1	210	1	210	1	42	1	98
2	96	2	96	2	520	2	420	2	420	2	420	2	420	2	420	2	420	2	420	2	84	2	96
3	94	3	94	3	780	3	630	3	630	3	630	3	630	3	630	3	630	3	630	3	126	3	94
4	93	4	93	4	1,040	4	840	4	840	4	840	4	840	4	840	4	840	4	840	4	168	4	93
5	92	5	92	5	1,300	5	1,050	5	1,050	5	1,050	5	1,050	5	1,050	5	1,050	5	1,050	5	210	5	92
6	91	6	91	6	1,560	6	1,260	6	1,260	6	1,260	6	1,260	6	1,260	6	1,260	6	1,260	6	252	6	91
7	90	7	90	7	1,820	7	1,470	7	1,470	7	1,470	7	1,470	7	1,470	7	1,470	7	1,470	7	294	7	90
8	89	8	89	8	2,080	8	1,680	8	1,680	8	1,680	8	1,680	8	1,680	8	1,680	8	1,680	8	336	8	89
9	88	9	88	9	2,340	9	1,890	9	1,890	9	1,890	9	1,890	9	1,890	9	1,890	9	1,890	9	378	9	88
10	87	10	87	10	2,600	10	2,100	10	2,100	10	2,100	10	2,100	10	2,100	10	2,100	10	2,100	10	420	10	87
11	86	11	86	11	2,860	11	2,310	11	2,310	11	2,310	11	2,310	11	2,310	11	2,310	11	2,310	11	462	11	86
12	85	12	85	12	3,120	12	2,520	12	2,520	12	2,520	12	2,520	12	2,520	12	2,520	12	2,520	12	504	12	85
13	84	13	84	13	3,380	13	2,730	13	2,730	13	2,730	13	2,730	13	2,730	13	2,730	13	2,730	13	546	13	84
14	83	14	83	14	3,640	14	2,940	14	2,940	14	2,940	14	2,940	14	2,940	14	2,940	14	2,940	14	588	14	83
15	82	15	82	15	3,900	15	3,150	15	3,150	15	3,150	15	3,150	15	3,150	15	3,150	15	3,150	15	630	15	82
16	81	16	81	16	4,160	16	3,360	16	3,360	16	3,360	16	3,360	16	3,360	16	3,360	16	3,360	16	672	16	81
17	80	17	80	17	4,420	17	3,570	17	3,570	17	3,570	17	3,570	17	3,570	17	3,570	17	3,570	17	714	17	80
18	79	18	79	18	4,680	18	3,780	18	3,780	18	3,780	18	3,780	18	3,780	18	3,780	18	3,780	18	756	18	79
19	78	19	78	19	4,940	19	3,990	19	3,990	19	3,990	19	3,990	19	3,990	19	3,990	19	3,990	19	798	19	78
20	77	20	77	20	5,200	20	4,200	20	4,200	20	4,200	20	4,200	20	4,200	20	4,200	20	4,200	20	840	20	77
21	76	21	76	21	5,460	21	4,410	21	4,410	21	4,410	21	4,410	21	4,410	21	4,410	21	4,410	21	882	21	76
22	75	22	75	22	5,720	22	4,620	22	4,620	22	4,620	22	4,620	22	4,620	22	4,620	22	4,620	22	924	22	75
23	74	23	74	23	5,980	23	4,830	23	4,830	23	4,830	23	4,830	23	4,830	23	4,830	23	4,830	23	966	23	74
24	73	24	73	24	6,240	24	5,040	24	5,040	24	5,040	24	5,040	24	5,040	24	5,040	24	5,040	24	1,008	24	73
25	72	25	72	25	6,500	25	5,250	25	5,250	25	5,250	25	5,250	25	5,250	25	5,250	25	5,250	25	1,050	25	72
26	71	26	71	26	6,760	26	5,460	26	5,460	26	5,460	26	5,460	26	5,460	26	5,460	26	5,460	26	1,092	26	71
27	70	27	70	27	7,020	27	5,670	27	5,670	27	5,670	27	5,670	27	5,670	27	5,670	27	5,670	27	1,134	27	70
28	69	28	69	28	7,280	28	5,880	28	5,880	28	5,880	28	5,880	28	5,880	28	5,880	28	5,880	28	1,176	28	69
29	68	29	68	29	7,540	29	6,090	29	6,090	29	6,090	29	6,090	29	6,090	29	6,090	29	6,090	29	1,218	29	68
30	67	30	67	30	7,800	30	6,300	30	6,300	30	6,300	30	6,300	30	6,300	30	6,300	30	6,300	30	1,260	30	67
31	66	31	66	31	8,060	31	6,510	31	6,510	31	6,510	31	6,510	31	6,510	31	6,510	31	6,510	31	1,302	31	66
32	65	32	65	32	8,320	32	6,720	32	6,720	32	6,720	32	6,720	32	6,720	32	6,720	32	6,720	32	1,344	32	65
33	64	33	64	33	8,580	33	6,930	33	6,930	33	6,930	33	6,930	33	6,930	33	6,930	33	6,930	33	1,386	33	64
34	63	34	63	34	8,840	34	7,140	34	7,140	34	7,140	34	7,140	34	7,140	34	7,140	34	7,140	34	1,428	34	63
35	62	35	62	35	9,100	35	7,350	35	7,350	35	7,350	35	7,350	35	7,350	35	7,350	35	7,350	35	1,470	35	62
36	61	36	61	36	9,360	36	7,560	36	7,560	36	7,560	36	7,560	36	7,560	36	7,560	36	7,560	36	1,512	36	61
37	60	37	60	37	9,620	37	7,770	37	7,770	37	7,770	37	7,770	37	7,770	37	7,770	37	7,770	37	1,554	37	60
38	59	38	59	38	9,880	38	7,980	38	7,980	38	7,980	38	7,980	38	7,980	38	7,980	38	7,980	38	1,596	38	59
39	58	39	58	39	10,140	39	8,190	39	8,190	39	8,190	39	8,190	39	8,190	39	8,190	39	8,190	39	1,638	39	58
40	57	40	57	40	10,400	40	8,400	40	8,400	40	8,400	40	8,400	40	8,400	40	8,400	40	8,400	40	1,680	40	57
41	56	41	56	41	10,660	41	8,610	41	8,610	41	8,610	41	8,610	41	8,610	41	8,610	41	8,610	41	1,722	41	56
42	55	42	55	42	10,920	42	8,820	42	8,820	42	8,820	42	8,820	42	8,820	42	8,820	42	8,820	42	1,764	42	55
43	54	43	54	43	11,180	43	9,030	43	9,030	43	9,030	43	9,030	43	9,030	43	9,030	43	9,030	43	1,806	43	54
44	53	44	53	44	11,440	44	9,240	44	9,240	44	9,240	44	9,240	44	9,240	44	9,240	44	9,240	44	1,848	44	53
45	52	45	52	45	11,700	45	9,450	45	9,450	45	9,450	45	9,450	45	9,450	45	9,450	45	9,450	45	1,890	45	52
46	51	46	51	46	11,960	46	9,660	46	9,660	46	9,660	46	9,660	46	9,660	46	9,660	46	9,660	46	1,932	46	51
47	50	47	50	47	12,220	47	9,870	47	9,870	47	9,870	47	9,870	47	9,870	47	9,870	47	9,870	47	1,974	47	50
48	49	48	49	48	12,480	48	10,080	48	10,080	48	10,080	48	10,080	48	10,080	48	10,080	48	10,080	48	2,016	48	49
49	48	49	48	49	12,740	49	10,290	49	10,290	49	10,290	49	10,290	49	10,290	49	10,290	49	10,290	49	2,058	49	48
50	47	50	47	50	13,000	50	10,500	50	10,500	50	10,500	50	10,500	50	10,500	50	10,500	50	10,500	50	2,100	50	47
51	46	51	46	51	13,260	51	10,710	51	10,710	51	10,710	51	10,710	51	10,710	51	10,710	51	10,710	51	2,142	51	46
52	45	52	45	52	13,520	52	10,920	52	10,920	52	10,920	52	10,920	52	10,920	52	10,920	52	10,920	52	2,184	52	45
53	44	53	44	53	13,780	53	11,130	53	11,130	53	11,130	53	11,130	53	11,130	53	11,130	53	11,130	53	2,226	53	44
54	43	54	43	54	14,040	54	11,340	54	11,340	54	11,340	54	11,340	54	11,340	54	11,340	54	11,340	54	2,268	54	43
55	42	55	42	55	14,300	55	11,550	55	11,550	55	11,550	55	11,550	55	11,550	55	11,550	55	11,550	55	2,310	55	42
56	41	56	41	56	14,560	56	11,760	56	11,760	56	11,760	56	11,760	56	11,760	56	11,760	56	11,760	56	2,352	56	41
57	40	57	40	57	14,820	57	11,970	57	11,970	57	11,970	57	11,970	57	11,970	57	11,970	57	11,970	57	2,394	57	40
58	39	58	39	58	15,080	58	12,180	58	12,180	58	12,180	58	12,180	58	12,180	58	12,180	58	12,180	58	2,436	58	39
59	38	59	38	59	15,340	59	12,390	59	12,390	59	12,390	59	12,390	59	12,390	59	12,390	59	12,390	59	2,478	59	38
60	37	60	37	60	15,600																		

APPENDIX.

Expedition of Mr. Assistant-Surveyor Edmund Kennedy to ascertain the course of the River Victoria. Communicated by the Colonial Office.

[Read Jan. 8, 1849.]

HAVING reached the lowest point of the Victoria attained by the Surveyor-General, I was directed "to pursue the river, and determine the course thereof as accurately as my light equipment and consequent rapid progress might permit." Accordingly, on the 13th of August we moved down the river, and at $4\frac{1}{2}$ miles crossed over to its proper right bank; the Victoria is there bounded on the south by a low sandstone ridge, covered with brigalow; and on the north by fine grassy plains, with here and there clumps of the silver-leaf brigalow. At 7 miles we passed a fine deep reach, below which the river is divided into three channels, and inclines more to the southward; at 13 miles we encamped upon the centre channel: the three were about half a mile apart, the southern one under the ridge being the deepest. We found water in each, but I believe it to be only permanent in the southernmost, which contains a fine reach, one mile below our encampment, in latitude $24^{\circ} 17' 34''$. An intelligent native whom we met there with his family, on our return, gave me the name of the river, which they call "Barcoo." I also obtained from him several useful words, which he seemed to take a pleasure in giving, and which I entered in my journal.

Between the parallels of $24^{\circ} 17'$ and $24^{\circ} 53'$, the river preserves generally a very direct course to the S.S.W., and maintains an unvaried character, although the supply of water greatly decreases below the latitude $24^{\circ} 25'$. It is divided into three principal channels, and several minor watercourses, which traverse a flat country lightly timbered by a species of flooded box; this flat is confined on either side by low sandstone ridges, thickly covered with an acacia scrub. In latitude $24^{\circ} 50'$ we had some difficulty in finding a sufficiency for our own consumption, but after searching the numerous channels, the deep (though dry) lagoons and lakes formed there by the river, we at length encamped at a small water-hole in latitude $24^{\circ} 52' 55''$ and longitude $144^{\circ} 11' 26''$.

Being aware that the principal view of the Government in sending me to trace the Victoria was the discovery of a practical route to the Gulf of Carpentaria, I then began to fear that I should be unable, with my small stock of provisions, to accomplish the two objects of my expedition. My instructions confined me to the river, which had now preserved, almost without deviation, a S.S.W. course for nearly 100 miles; the only method which occurred to me, by the adoption of which I might still hope to perform all that was desired, was to trace

the river with two men as far as latitude 26° , which the maintenance of its general course would have enabled me to do in two days, and then to hasten back to my party, to conduct them to the extreme northern point attained by the Victoria, and endeavour to prolong the direct route carried that far, from Sydney towards the Gulf of Carpentaria, by Sir Thomas Mitchell.

With this intention I left the camp on the 20th of August, and at 12 miles found several channels united, forming a fine reach, below which the river takes a turn to the W.S.W., receiving the waters of rather a large creek from the eastward, in latitude $25^{\circ} 3'$. In latitude $25^{\circ} 7'$, the river, having again inclined to the southward, impinges upon the point of a low range on its left, by the influence of which it is turned in one well-watered channel to the W. and W. by N. for nearly 30 miles; in that course the reaches are nearly connected, varying in breadth from 80 to 120 yards; firm plains of a pure white soil extend on either side the river; they were rather bare of pasture, but are evidently in some seasons less deficient of grass. In latitude $25^{\circ} 9' 30''$, and longitude about $143^{\circ} 16'$, a considerable river joins the Victoria from the N.E., which I would submit may be named the "Thomson," in honour of E. Deas Thomson, Esq., the Hon. the Colonial Secretary. It was on one of the five reaches in the westerly course of the Victoria that I passed the second night; the river there measured 120 yards across, and seemed to have a great depth; the rocks and small islets which here and there occurred in its channel giving it the semblance of a lasting and most important river: this unexpected change, however, both in its appearance and course, caused me to return immediately to my camp for the purpose of conducting my party down such a river whithersoever it should flow.

On the 25th of August we resumed our journey down that portion of the Victoria above described, and made the river mentioned from the N.E. three miles above its junction; following it down we found an unbroken sheet of water in its channel, averaging 50 yards in breadth; we forded it at the junction, and continued to move down the Victoria, keeping all the channels, into which it had again divided, on my left. At about 1 mile the river there turns to the S.S.W. and S., spreading over a depressed and barren waste, void of trees or vegetation of any kind, its level surface being only broken by small doones of red sand, resembling islands upon the dry bed of an inland sea, which, I am convinced, at no distant period did exist there.

On the 1st of September we encamped upon a long, though narrow, reach in the most western channel, at which point a low sandstone ridge, strewn with boulders, and covered with an acacia scrub, closes upon the river. This position is important, as a small supply of grass will (I think) in most seasons be found on the bank of the river, when not a blade, perhaps, may be seen within many miles above or below; my camp, which I marked ^KIV was in latitude $25^{\circ} 24' 22''$, longitude $142^{\circ} 51'$. Beyond camp IV the ridge recedes, and the soil becomes more broken and crumbling; our horses struggled with difficulty over this ground to my camp, at a small water-hole, in lat. $25^{\circ} 43' 44''$,

where I found it necessary to lighten some of their loads by having buried 400 lbs. of flour and 70 lbs. of sugar, still retaining a sufficient supply to carry us to Captain Sturt's farthest, on Cooper's Creek, to the eastward (to which point I was convinced this river would lead me), and from thence back to the settled districts of New South Wales, which was all I could then hope to accomplish. At about 16 miles farther, the ground becoming worse, so that our horses were continually falling into the fissures up to their hocks, I was compelled to leave 270 lbs. more of flour and sugar at my camp of the 4th of September, in lat. $25^{\circ} 51'$, at another small water-hole found in the bed of a very dry and insignificant channel. Here a barren sandstone range again impedes the river in its southerly course, and throws it off to the westward, thus causing many of its channels to unite and form a reach of water in lat. $25^{\circ} 54'$; this, the lowest reach we attained, I did not discover until my return, having found a sufficient supply in a channel more to the westward. In lat. $25^{\circ} 25'$, and long. by account $142^{\circ} 23'$, the river, having rounded the point of the range which obstructs it, resumes its southerly course, spreading in countless channels over a surface bearing flood-marks 6 and 10 feet above its present level; this vast expanse is only bounded to the eastward by the barren range alluded to, which ending abruptly runs parallel with the river at a distance varying from 4 to 7 miles. On the 7th of September I encamped upon a small water-hole in $26^{\circ} 0' 13''$ in the midst of a desert not producing a morsel of vegetation; yet so long as we could find water, transient as it was, I continued to push on with the hope of reaching sooner or later some grassy spot, whereon by a halt I might refresh the horses; however, that hope was destroyed at the close of the next day, for although I had commenced an early search for water when travelling to the southward, with numerous channels on either side of me, I was compelled at length to encamp in lat. $26^{\circ} 13' 9''$, and long. by account $142^{\circ} 20'$, on the bank of a deep channel, without either water or food for our wearied horses. The following morning, taking one man and Harry with me, we made a close search down the most promising watercourses and lagoons, but upon riding down even the deepest of them, we invariably found them break off into several insignificant channels, which again subdivided, and in a short distance dissipated the waters, derived from what had appeared the dry bed of a large river on the absorbing plain; returning in disappointment to the camp, I sent my lightest man and Harry on other horses to look into the channels still unexamined, but they also returned unsuccessful. We had seen late fires of the natives at which they had passed the night without water, and tracked them on their path from lagoon to lagoon in search of it; we also found that they had encamped on some of the deepest channels in succession, quitting each as it had become dry, having previously made holes to drain off the last moisture. My horses were by this time literally starving, and all we could give them was the rotten straw and weeds which had covered some deserted huts of the natives. Seeing then that it would be the certain loss of many, and consequently an unjustifiable risk of my party to attempt to push farther into a country where the aborigines themselves were at a loss

to find water, I felt it my imperative duty to at once abandon it. I would here beg to remark, that although unsuccessful in my attempt to follow it that far, from the appearance of the country, and long continued direction of the river's course, I think there can exist but little doubt that the "*Victoria*" is identical with *Cooper's Creek of Captain Sturt*; that Creek was abandoned by its discoverer in lat. 27° 56', long. 142°, coming from the N.E., and as the natives informed him, "in many small channels forming a large one;" the lowest camp of mine on the *Victoria* was in lat. 26° 13' 9", long. 142° 20'; the river, in several channels, trending due S., and the lowest point of the range which bounds that flat country to the eastward bearing S. 25° E.; Captain Sturt also states that the ground near the creek was so blistered and light, that it was unfit to ride on, but that before he turned he had satisfied himself that there was no apparent sign of water to the eastward.

Having marked a tree ^{EK} 1847 we commenced our return journey along the track at 2 P.M. of the 9th of September; at 8 miles I allowed one of the horses to be shot, for, being an old invalid and unable to travel farther, he must have starved if let alive. At 13 miles we reached the water; some while after dark the following day we made our next camp, but it was with much difficulty that my private horse and two or three others were brought to water, one being almost carried by three men the latter part of the day. Upon discovering the reach, in lat. 25° 54' near the range, and finding a little grass in the channel about the water, I gave the horses two days' rest. My camp on the reach is marked ^K III; it is in lat. 25° 55' 37", long. by account 142° 24'; the variation of the compass 8° E.; water boiled at 214°, the temperature of the air being 64°. On the 14th of September we proceeded on our journey, and reached the firm plains beyond the desert; on the 22nd, having halted a day, we again moved on, and arrived within 5 miles of the carts; on the 7th of October, leaving my party on the S. channel, I rode to the spot and found them still safe, although a native had been examining the ground that very morning. Lest he should have gone to collect others to assist him in his researches, I brought my party forward the same evening, had the carts dug out during the night, and at sunrise proceeded to our position of the 4th of August on the South Channel. Five natives were observed in the morning following on our track, and before the tents were pitched they drew near and ordered us away from the water; they had all their implements with them, and from their surly and untractable manner appeared to have been lately disappointed in a mining speculation. Pursuing our course up the river, we reached the Nive on the 18th of October; there was but little water in the hole near the Brigalow Creek, and none to be procured but by digging at the junction of the Nivelle. On leaving Camp 77, we found no water until we reached the first pool in the Warrego, a distance of 40 miles, all the intervening watercourses having become dry.

Finding upon my arrival on the Warrego that we had still 756 lbs.

of flour remaining, and feeling anxious to make some discovery, which might, at least in a small degree, palliate the bad tidings of which I was the bearer, I determined upon following that river down, with the view not only of finding an available country, but also of adding to what little is known of the range which divides the waters of the Darling from those of the interior. The "Nive" being the only watercourse of any importance between the Victoria and the Warrego, I conceived, that should the latter river be found to fall to the westward, or be joined by the "Nive" in an easterly course, in either case the form and position of that range would, to a certain extent, be established. With these views, I accordingly left the pond on the Warrego, in lat. $25^{\circ} 16' 10''$, on the 25th of October, and continued to travel down that river until the 18th of November, with the following results:—

So far as my camp, marked $\frac{K}{15}$ in lat. $25^{\circ} 55' 57''$ and long. $146^{\circ} 44' 7''$, the Warrego maintains its deep sandy bed, averaging 40 feet in breadth; it intersects an open forest country with good pasture, the forest being generally composed of several varieties of Eucalypti, such as the iron-bark, box, &c., the acacia, and pine; the trees on the immediate bank of the river are chiefly the flooded gum and oak, which wear a healthy appearance and attain a growth very remarkable on the banks of a channel in which water can never lodge. The river is joined in lat. $25^{\circ} 35'$ by the creek before mentioned as being the next to the eastward; its channel is broad and sandy near the junction, and contains small but permanent water-holes; the country bordering it resembling in every respect that on the Warrego. In lat. $25^{\circ} 51' 22''$ another creek enters the Warrego from the eastward, at the junction of which water may at all times be found; the river again receives the waters of a creek which I called the "Yo-Yo" Creek, in lat. $25^{\circ} 55' 57''$; this creek has its source in the range of which Mount Boyd is a fixed point, and contained an abundance of water in its chain of holes: of the Warrego thus far, I may in a word say, that its grassy banks and clear forest land render it available for either sheep or horse stock, but it is unfit for cattle from there being no surface water; we obtained a supply on travelling down the river, either from wells sunk 2 or 3 feet by ourselves, or caused by the uprooting of a large tree on a level with its bed. Water can be procured in almost any part of its whole course, by clearing away the sand to the depth of from 1 to 5 feet, more especially at the junction of a creek, however small.

From camp XV to lat. $28^{\circ} 15' 44''$ and long. $145^{\circ} 28' 52''$, the river contains deep reaches of water occurring at short distances, and increasing in proximity as we advanced; this inexhaustible supply of water is bounded by open forest for the first 40 miles, and from thence by extensive plains thickly covered with the most luxuriant pasture, and broken here and there by clumps of "acacia pendula." I have never seen in the colony any country which surpasses it, and but very little to equal it, either as being adapted for the depasturing of cattle or any kind of stock. In lat. $28^{\circ} 3'$, we encamped upon a reach, but found the

country much fallen off in appearance; between that camp and ^KXXII in lat. 28° 15' 44", the river rapidly diminished by throwing off water-courses to the eastward, and it was only after a long search that we found a spot at which we could procure a supply of water by digging. At 13 miles beyond, or in about latitude 28° 25', the river, now much reduced, splits into two equal parts, the one running directly to the eastward, the other in the opposite direction to the westward; the eastern channel, however, after a circuitous turn, rejoins that to the westward, without improving, what the river had here become, the insignificant dry bed of a watercourse: the country on either side, being flat and subject to inundation, was of a poor crumbling soil, void of grass and thickly wooded by a species of small stunted box and acacia.

I was then in lat. about 28° 25' and long. 145° 28', having ventured again that far to the westward with the hope of carrying the fine country we had lately traversed the whole way to the Barwan.

Being now unable to procure water in either channel of the river, even by sinking wells, once more disgusted and disappointed, as all travellers will ever be who put their trust in the interior rivers of New Holland, I decided upon leaving it and moving towards the Culgoa, for, although 80 miles distant, it was the nearest water to the position I was then in; accordingly, on the evening of the 18th of November, I left the Warrego, steering S. 37° E., and at 8 A.M. of the next day we encamped on a watercourse from the N.E., containing shallow holes of water; on the 20th I followed the watercourse for about 3 miles, when finding it reduced and turning sharp to the eastward, I resumed my course for the Culgoa, which river I reached with the horses on the morning of the 22nd; but in travelling that distance the ground and weather proved so very unfavourable, that I lost three of my best draught horses before I could accomplish it, which loss led to the death of three others in bringing the carts to the river. This loss was the first of any kind we had sustained on the journey, with the exception of the horse left on the desert. At about 30 miles from the Culgoa we had to traverse hills of bare red sand partially covered by spine-fir and a low kind of brush, which, being on fire in every direction, was kept raging within a few yards of us by the hottest wind I have experienced this season; the thermometer in the shade was that day 110°.

It was the 15th of December before my carts were brought up and the horses sufficiently recovered to continue our journey, and on the 16th we left my first camp on the Culgoa, in lat. 29° 29' 41", long. 146° 36' 52", moving by short stages down the river. In lat. 29° 35' the Birie, another outlet of the Balonne, joins the river from the eastward; in lat. 29° 50', having crossed the river, I struck off for the Barwan, which we reached in 6 miles, our position being 40 miles above Fort Bourke and 9 below Mr. Lawson's station; proceeding up the river for supplies, I returned to my first camp on the Barwan, marked ^KXXVII, and on the 27th of December crossed over to the Bogan, following that river up to Mr. Andrew Ker's station, at which we arrived last evening.

With respect to the aborigines, I beg to state we have been generally on the most friendly terms, making them presents and establishing a kind feeling, which I trust may be beneficially felt by those of our countrymen who may follow me into that portion of New Holland. On two or three occasions only we had to exercise what I believe to have been unparalleled forbearance, to avoid collision with them, but finally succeeded.

The Victoria language is spoken on the Warrego with only a slight difference in the pronunciation; on the shallow watercourse (70 miles from the Culgoa, and 95 from the Barwan) we met a tribe who spoke a different language, but understood that of the Victoria; the natives of the Barwan and Bogan appear to know nothing of the interior language.

In conclusion, it is my pleasing duty to make a few brief observations on the remarkably good conduct of every member composing my party, of whom collectively I need only state, that they have undergone the hardships and privations experienced on this journey, toiling frequently on foot through the desert (upon a ration of 75 lbs. of flour equally divided among nine men) with a constant and ready obedience, and without a murmur.*

* Extract of a letter addressed to Earl Grey, by Governor Sir Charles Fitzroy, dated Sydney, 25th April, 1849:—

"My Lord,—It becomes my painful duty to report to your Lordship the melancholy fate of the expedition which was despatched in the early part of last year for the further exploring of the northern portion of this colony, from Rockingham Bay to Cape York. The party, comprising eleven Europeans and an aboriginal native, was intrusted to the direction of Mr. Assistant-Surveyor E. B. C. Kennedy, who had on former occasions manifested peculiar fitness for such a duty, and whose noble conduct throughout this expedition amply justified the confidence reposed in him. Of the thirteen persons forming the party, but three have returned. The fate of three is still uncertain, and the gallant leader himself was speared to death by the natives when on the very eve of accomplishing the principal object of his mission.

"I have arranged with the master of the brig 'Freak,' now on her way to Port Essington and China, to land a number of his crew, firstly at Melbourne Bay, and then at Escape River, in order that, under the guidance of the native 'Jackey Jackey,' who, with two other aborigines, has been sent for the purpose, they may endeavour to ascertain the fate of the unfortunate men left at the former place, and, if possible, recover Mr. Kennedy's journals,^a which were on his death secreted by 'Jackey Jackey.' Should this latter effort prove successful, the cause of geographical science will, in some measure at least, reap the advantage of Mr. Kennedy's labours; and even should it fail, still much valuable information may be anticipated from a detailed account of the expedition (now in course of preparation) by one of the survivors, Mr. Carron, who was attached to the party in the capacity of botanist."—ED.

^a Information of the recovery of these Journals has since been received at the Colonial Office.—ED.

Note to Dr. GUTZLAFF'S Paper.

"Annam, or Cochin-China," says Mr. Aaron Palmer, in his late valuable paper 'On the Commerce of the Oriental Nations,' submitted to the Government of the United States, "is most advantageously situated for foreign trade. No country in the East produces richer or a greater variety of articles proper for carrying on an advantageous commerce. Possessing between 1100 and 1200 miles of coast of its own on the China Sea and Gulf of Tonquin, it is within a few days' sail of Canton; has the Philippines lying opposite to it; the great island of Borneo, the Moluccas and Banda islands, a few degrees to the south-east; with Siam, the Malay peninsula, Singapore, and the Straits settlements, to the westward. Its numerous commodious harbours on the coast, particularly that of Turon, afford a safe retreat for ships of any burthen navigating the China seas during the most tempestuous seasons of the year."—ED.

Note to Mr. COOLEY'S Paper.

The coast of the Somalis on the Gulf, from Berbera to Cape Gardafui, may be considered the native country of frankincense, myrrh, and odoriferous gums. The celebrity of Arabia, from the remotest ages, for those elegant productions, has been chiefly acquired by its large imports from this coast.—The river Joob, known to the natives as Gowin or Webbe-Gananeh, which has its source in the eastward edge of the Great Abyssinian plateau, and falls into the Indian Ocean in lat. 0° 14' south, at the town of Joob, is supposed to be about 700 miles in length, and is said to offer a safe channel of communication, during three months in the year, with that section of Eastern Africa, greatly preferable in many respects, and less tedious and perilous, than the usual land journeys by caravans from the Somali ports on the Gulf of Aden.—*Vide* Aaron Palmer; likewise M^rQueen's *Geogr. Survey of Africa*.—ED.

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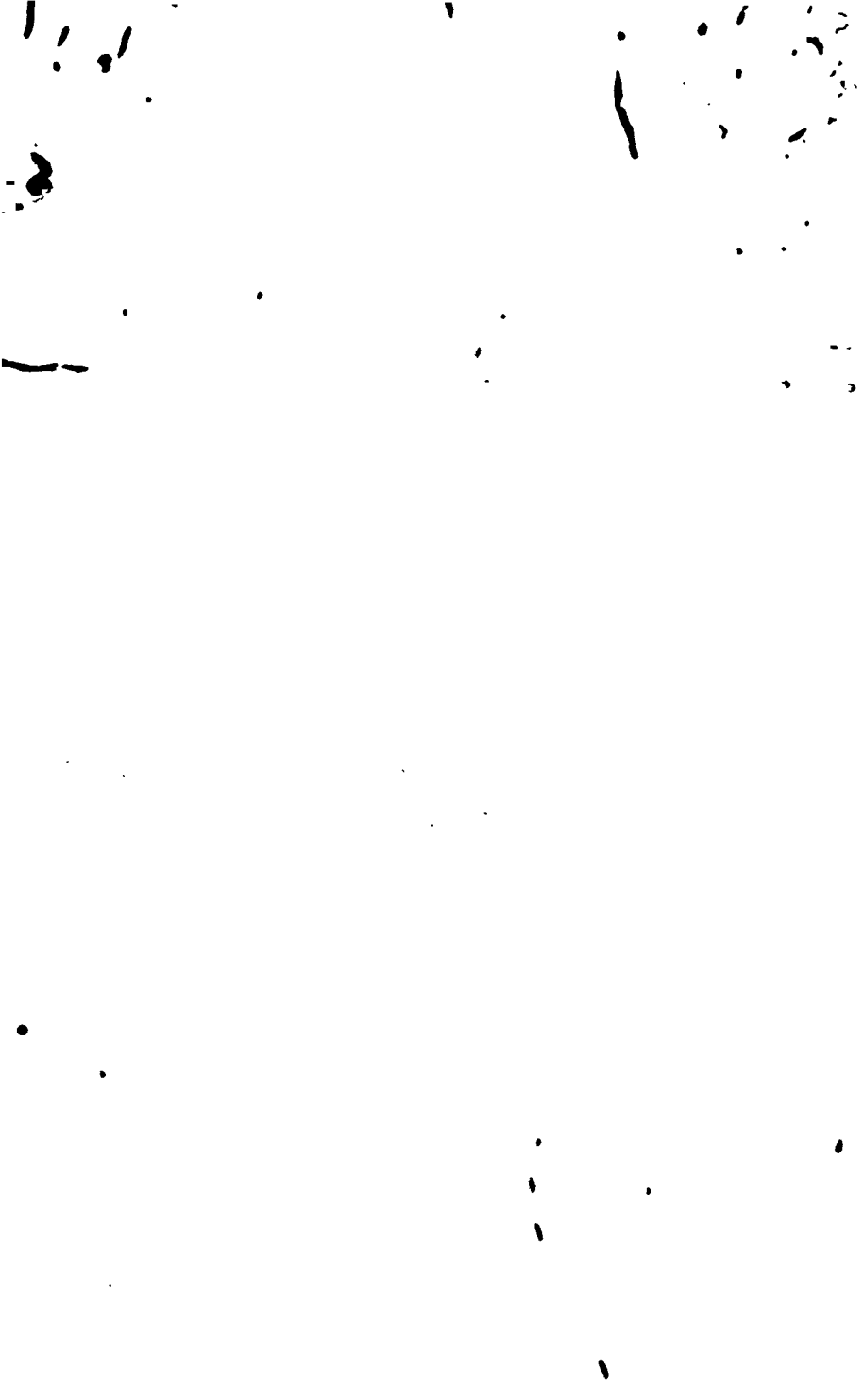
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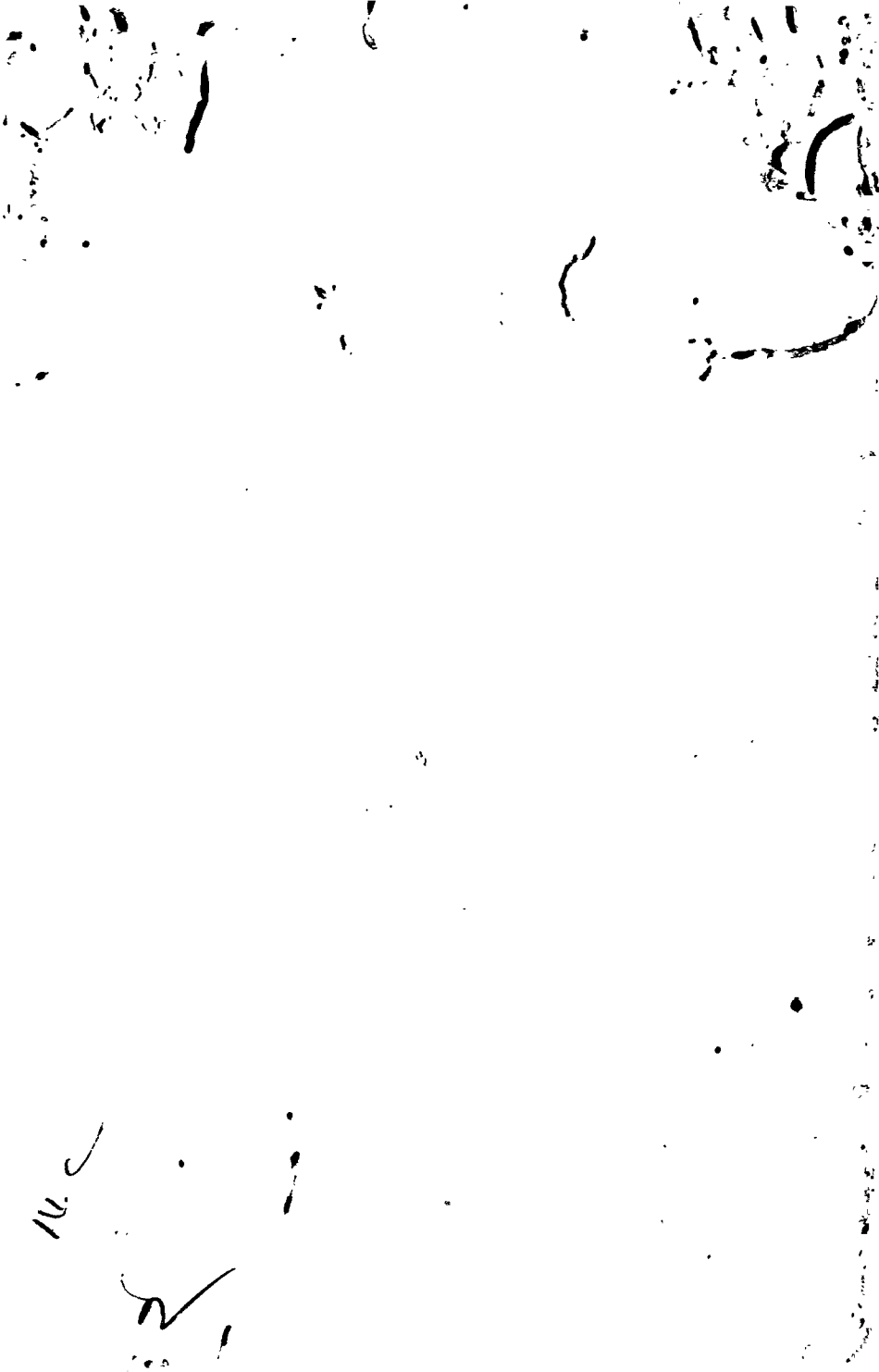
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